AN ACCOUNT

GOV.T OF INDIA
LIBRARY

OF THE

MEASUREMENT OF TWO SECTIONS

OF

THE MERIDIONAL ARC OF INDIA,

BOUNDED BY THE

PARALLELS OF 18° 3′ 15″; 24° 7′ 11″; & 29° 30′ 48″.

GOVERNMENT OBSERVATORY
LIBRARY
MADRAS

CONDUCTED

Under the Orders of the Honourable East-India Company,

BY

LIEUT.-COLONEL EVEREST, F.R.S. &c.

LATE SURVEYOR-GENERAL OF INDIA,

AND HIS ASSISTANTS.

GREAT TRIGONOMETRICAL SURVEY OF INDIA
1881.

ENGRAVINGS.

LONDON:

PRINTED BY ORDER OF THE COURT OF DIRECTORS
OF THE HON. EAST-INDIA COMPANY,

BY J. & H. COX, 74-5, GREAT QUEEN STREET.

1847.

INDEX TO THE PLATES.

SERIES A I, II, III, IV, V.

PLATES.

1, 2, 3, 4, 5..... Drawings illustrative of the alterations introduced in the Astronomical Circles.

SERIES B I, II, III.

6, 7, 8..... .. .. .. 3 feet Theodolite constructed for the H. E. I. Company by Messrs. Troughton and Simms.

SERIES C I, II, III.

9, 10, 11..... .. .. .. 3 feet Theodolite constructed by Mr. Barrow under the direction of Lieut.-Col. Everest.

SERIES D I, II, III.

12, 13, 14 .... Astronomical Circles constructed by Messrs. Troughton and Simms, as altered by Lieut.-Col. Everest.

SERIES E I, II, III, IV, V.

15, 16, 17, 18, 19 .. .. Compensation Bars and Microscopes and their subsidiary apparatus.

20..... Drawing of the Referring Sight Vane.

21..... .. .. Reverberatory Lamp.

22..... .. .. Observatory at Kalianpur.

23..... .. .. Observatories of Kaliana and Damargida.

24..... .. .. Scaffolding used in the Approximate Series.

25..... .. .. Towers constructed in the Doab.

26..... .. .. Balance Crane.

SERIES F I, II.

27, 28 ..... Drawings illustrative of the Barometer Pump.

29..... Drawing of the Pyramidal Micrometer used for comparing Chains with the Iron 10 feet Standard.

30..... Plan of the Tract in which the Dehra Dun Base was measured.

SERIES G I, II.

31, 32 ..... Plans of Triangles.

Pillar & Stand of Masonry

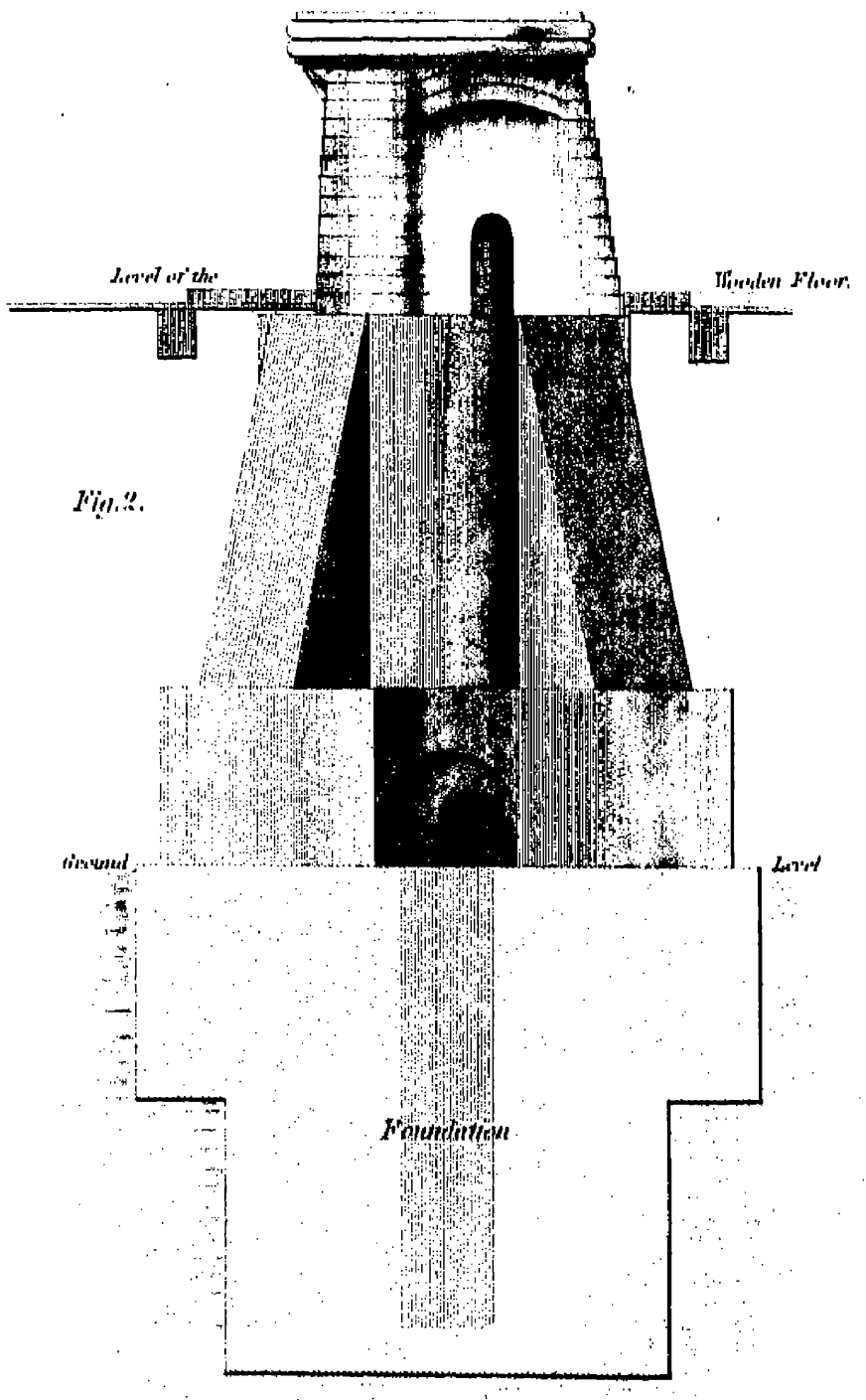


Fig. 2.

Pillar & Wooden Tripod

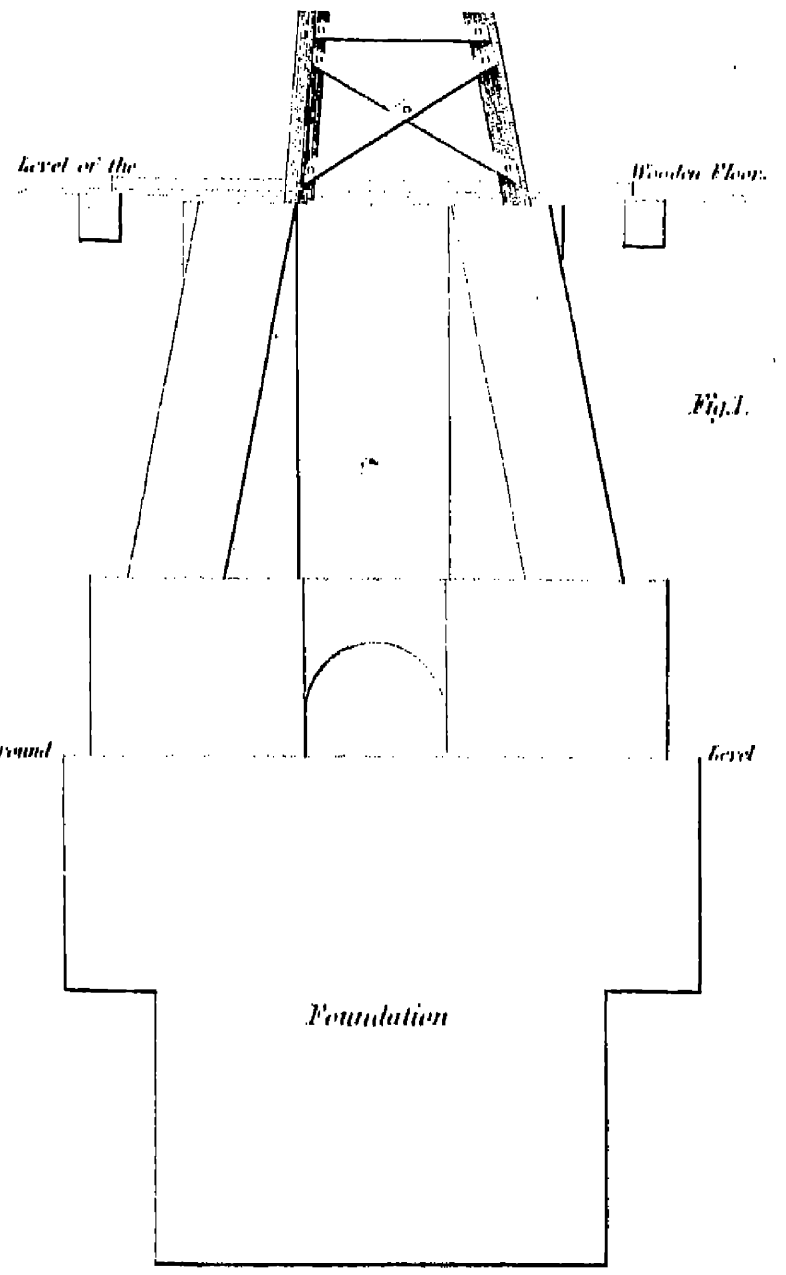
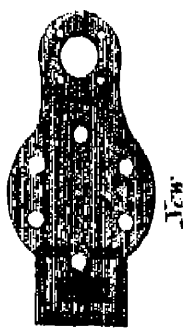


Fig. 1.

Figures 2.4.6.8.10 are illustrative of the alterations introduced in the Stand. Table. Y-plate & axis, by the Surveyor General of India. Figures 1.3.5.7.9 show the same parts as they were originally constructed by Messrs. Troughton and Simms.

The scale of figures 1. & 2 is $\frac{1}{10}$, that of all the rest of these drawing is $\frac{1}{4}$ of the natural size.

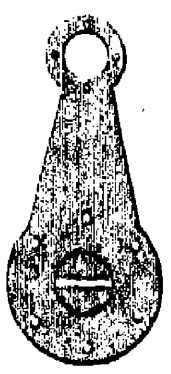
Fig. 8.



Plan of Outriggers

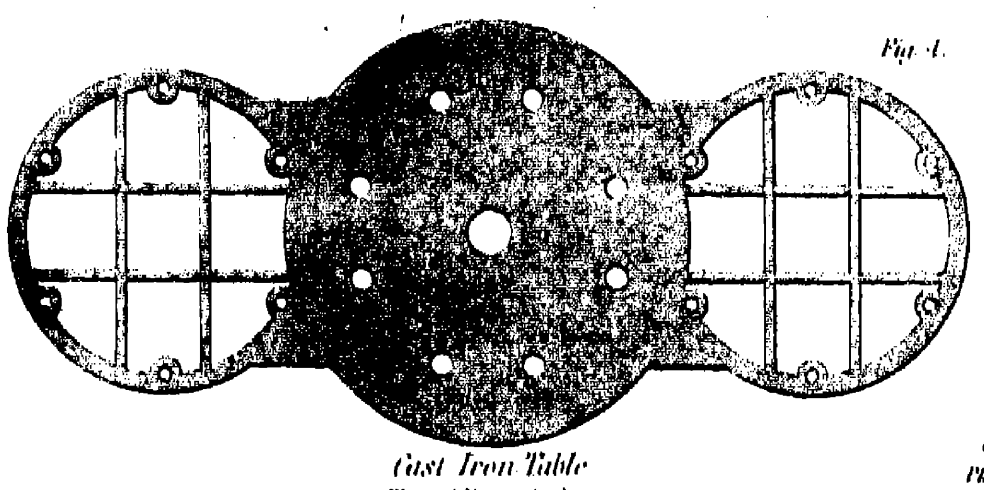
New

Fig. 7.



Original

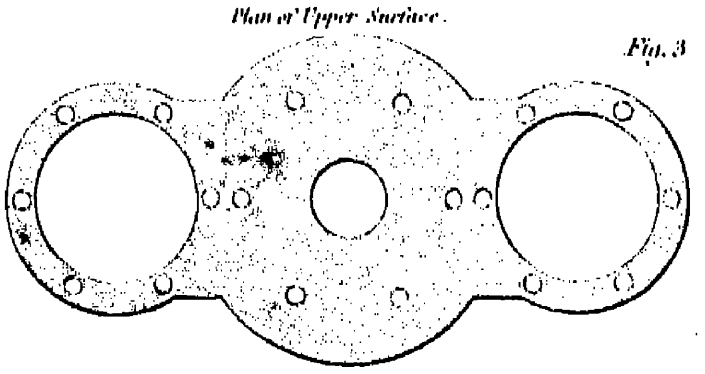
Fig. 4.



Cast Iron Table
Plan of Upper Surface

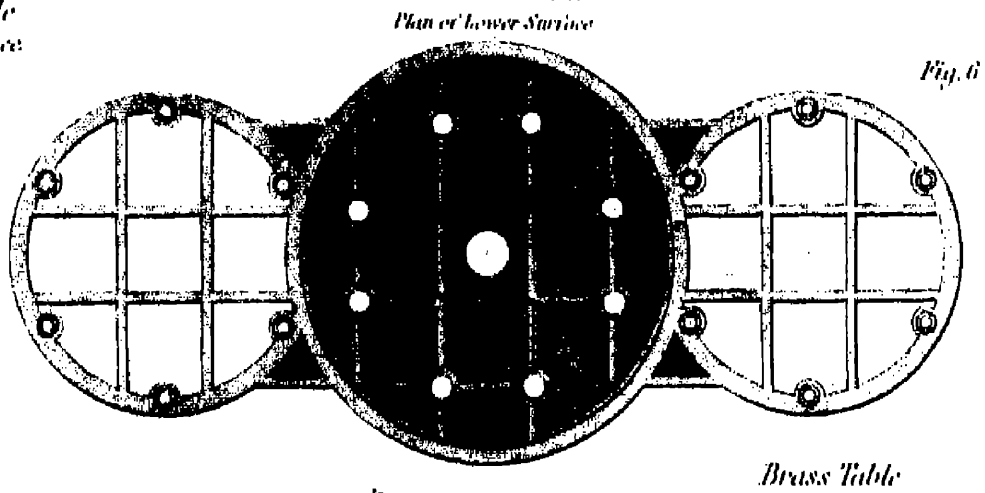
Brass Table
Plan of Upper Surface.

Fig. 3

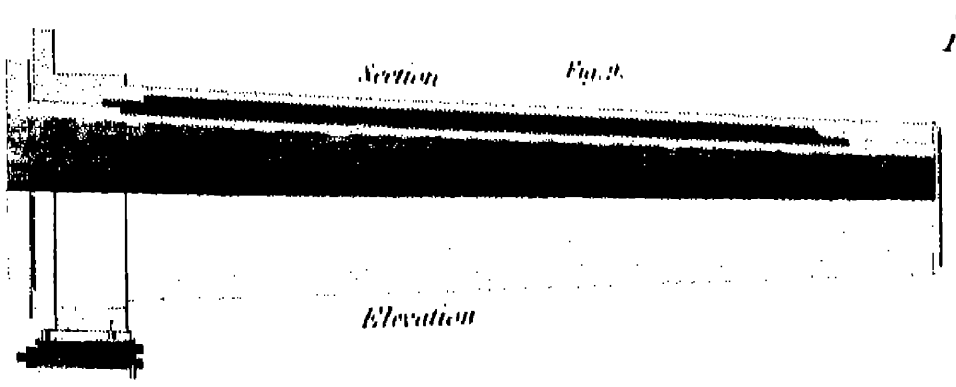


Cast Iron Table
Plan of Lower Surface

Fig. 6



Section *Fig. 9.*

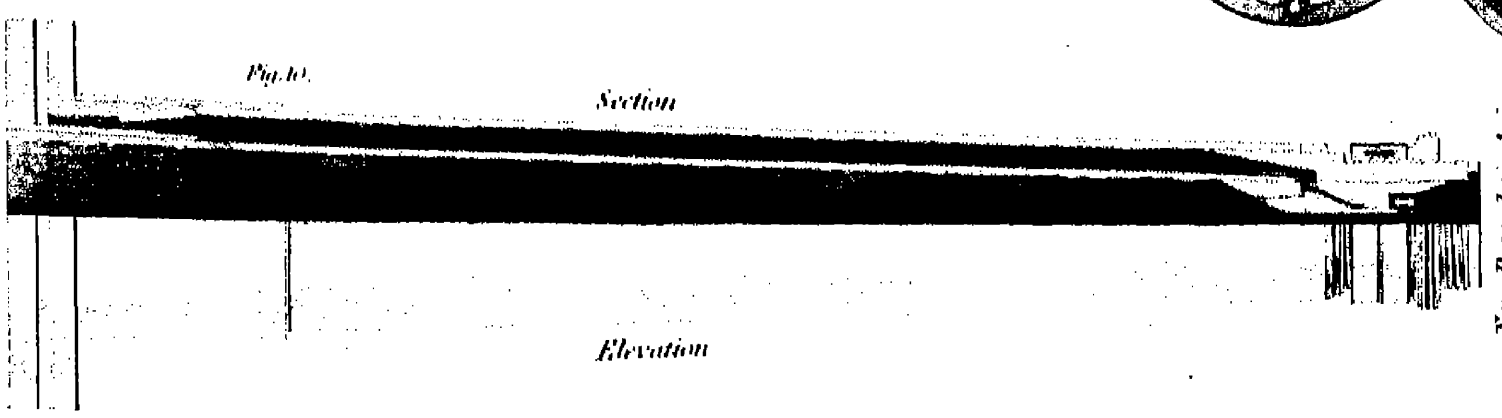


Original Axis

Elevation

Fig. 10.

Section

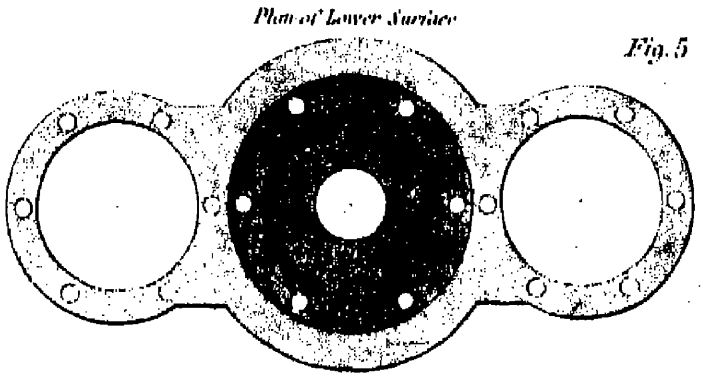


New Ramsdens Axis

Elevation

Brass Table
Plan of Lower Surface

Fig. 5



Drawn in the Field Office of the Surveyor General of India, at Hatipaun.

Engraved by S Stockley.

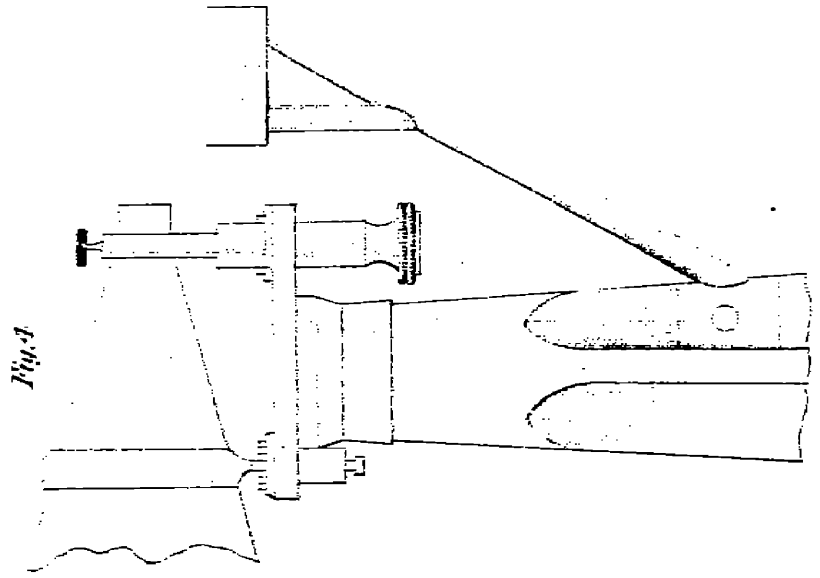


Fig. 4

Arrangement of the Friction Rollers and lamp supporter.

New Brass Columns constructed in 1838.

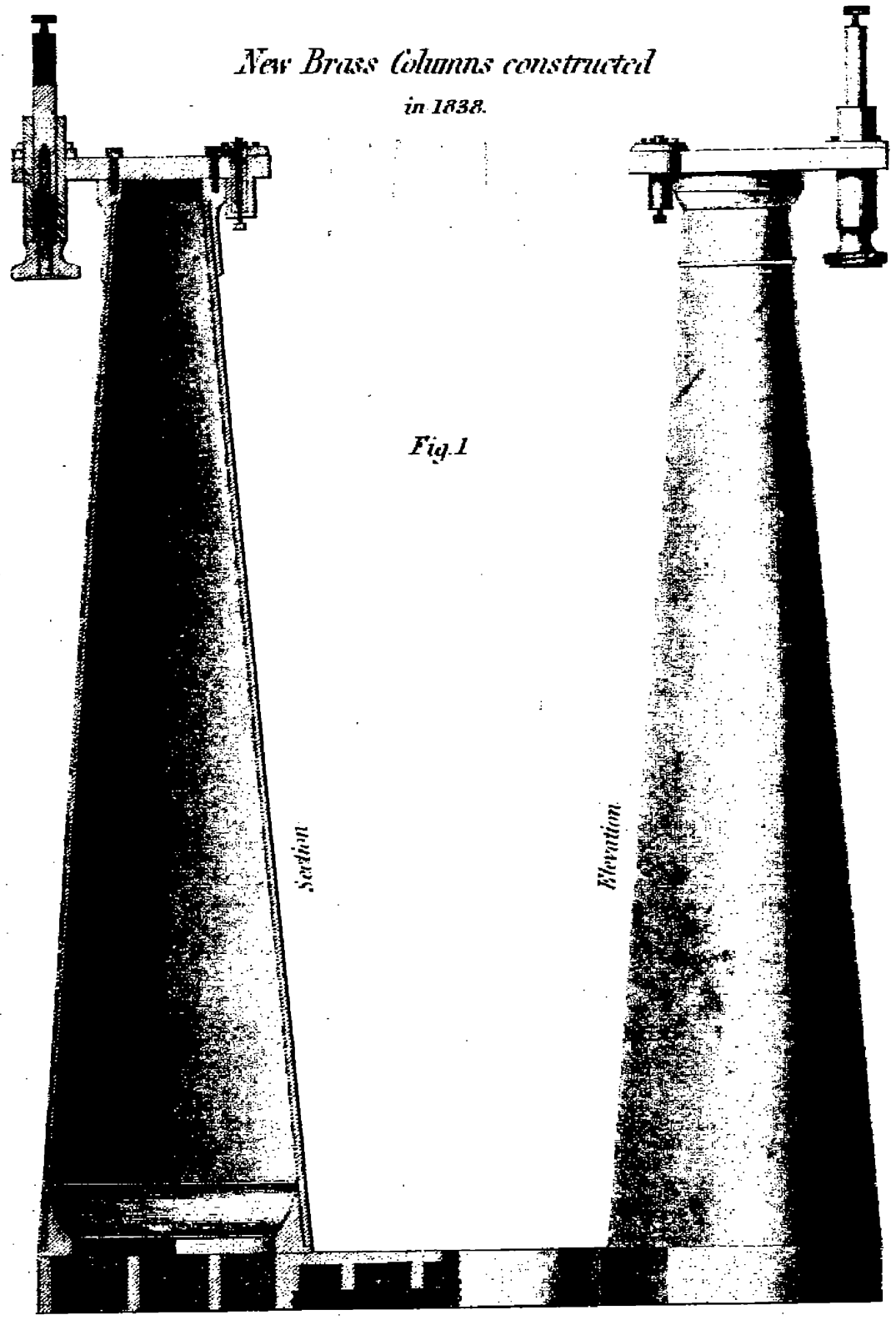


Fig. 1

Original Brass Columns

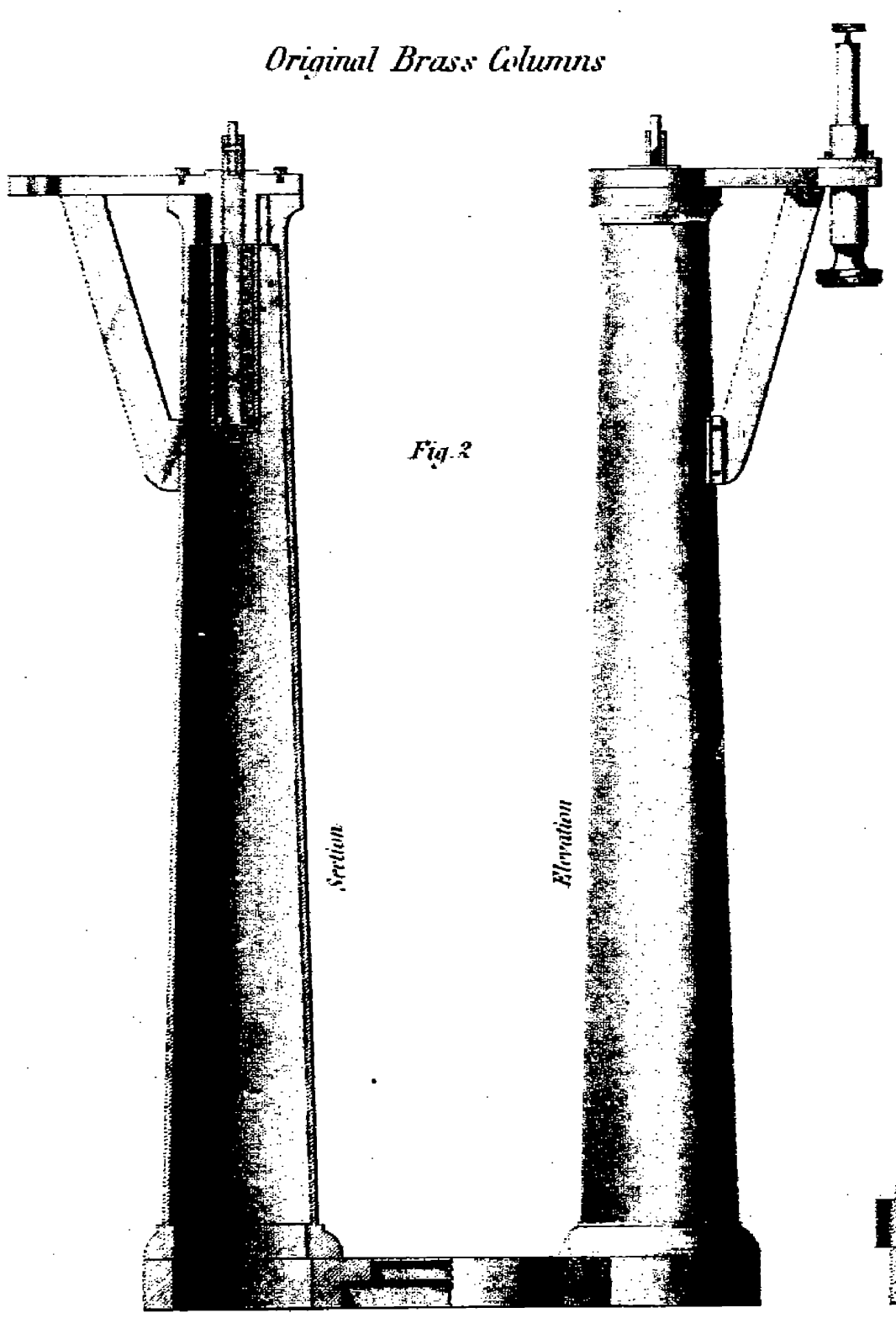


Fig. 2

Columns last constructed in 1839.

Shafts & Bases of Sandstone.

Capitals of Brass.

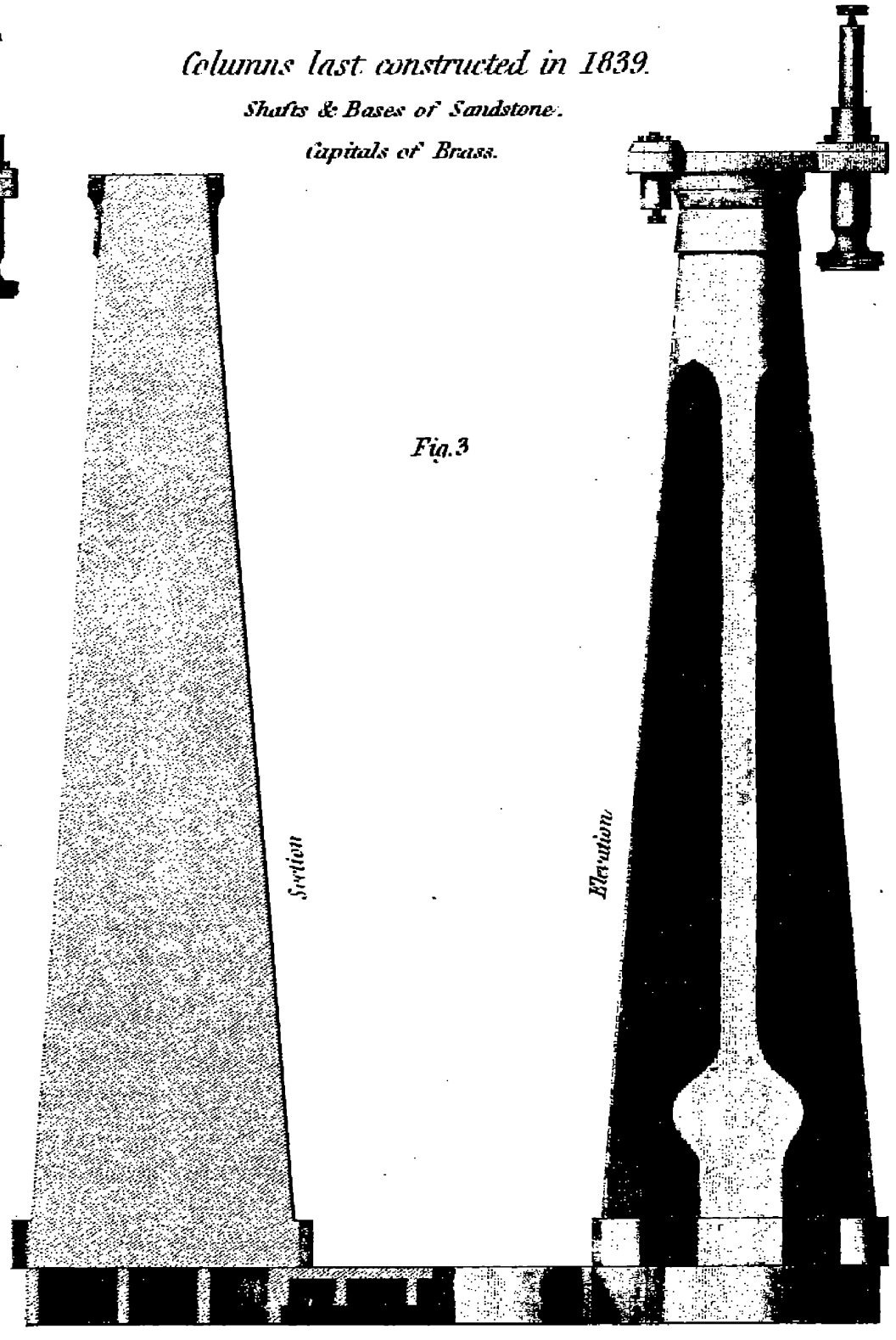


Fig. 3

In this plate Figures 1, 3, 4 are illustrative of the alterations introduced into the columns of the astronomical Circles, by the Surveyor General of India. Figure 2 shews the same parts as they originally came from the workshop of Messrs Troughton & Simms. The Scale of all these drawings is $\frac{1}{8}$ of the natural size.

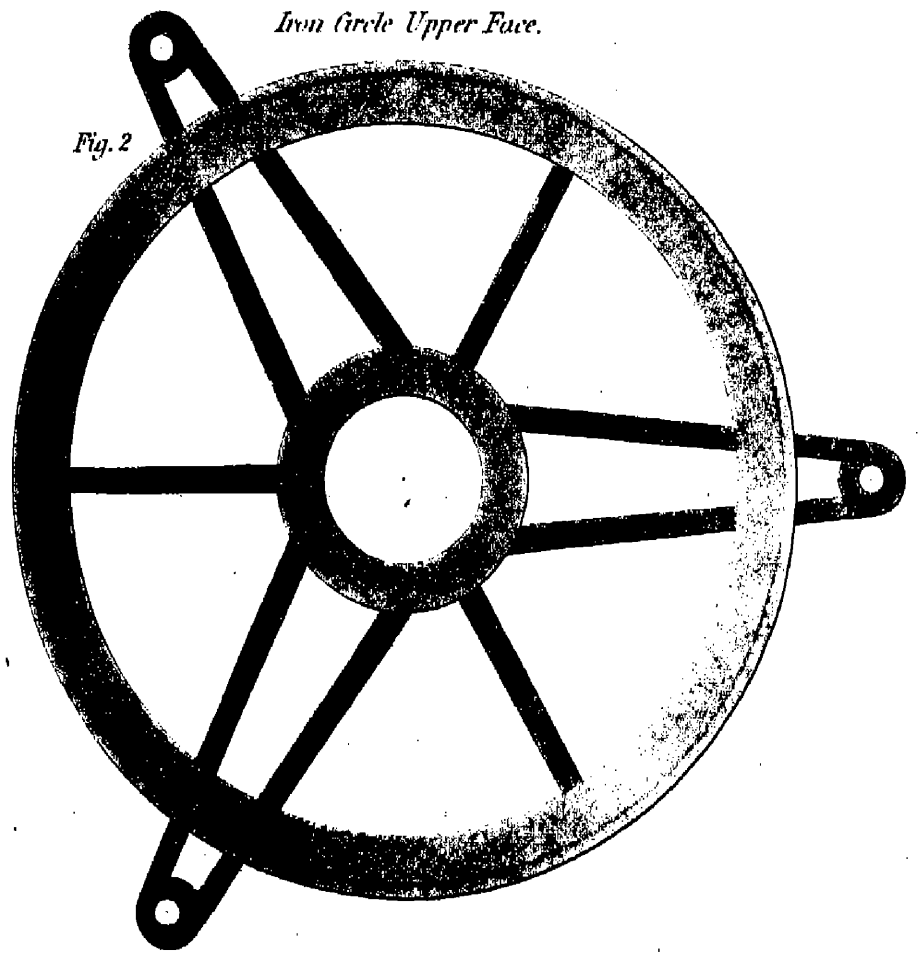
Engraved by S. Stoddart.

PLANS AND SECTIONS OF THE NEW IRON CIRCLE AND THE ORIGINAL BRASS CIRCLE.

Scale $\frac{1}{8}$ of the Natural Size.

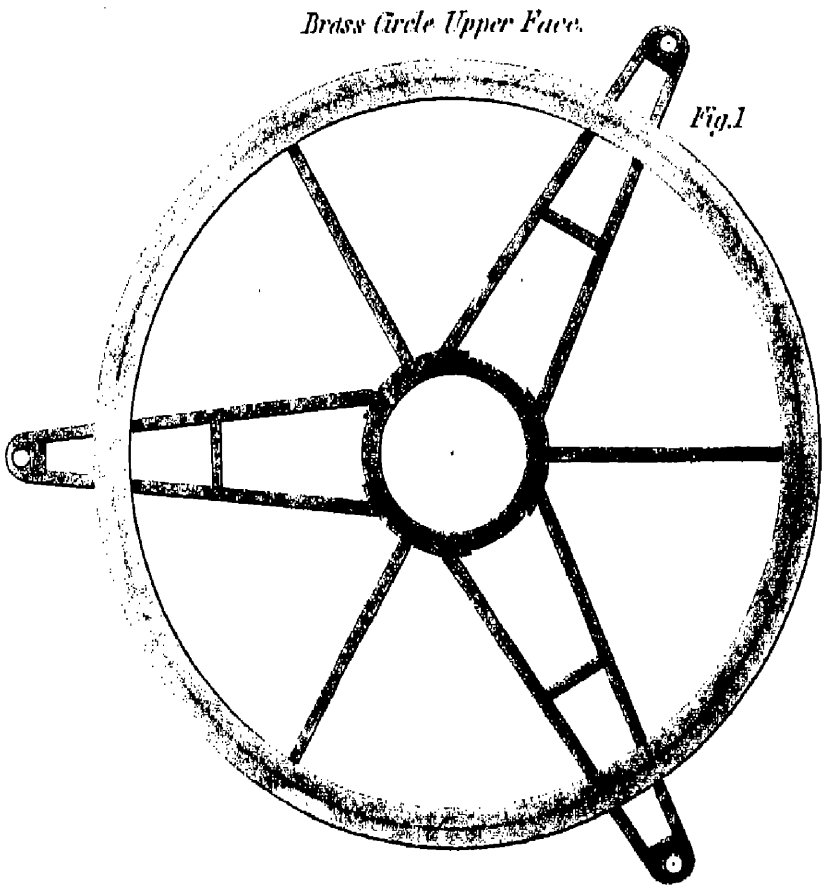
Iron Circle Upper Face.

Fig. 2



Brass Circle Upper Face.

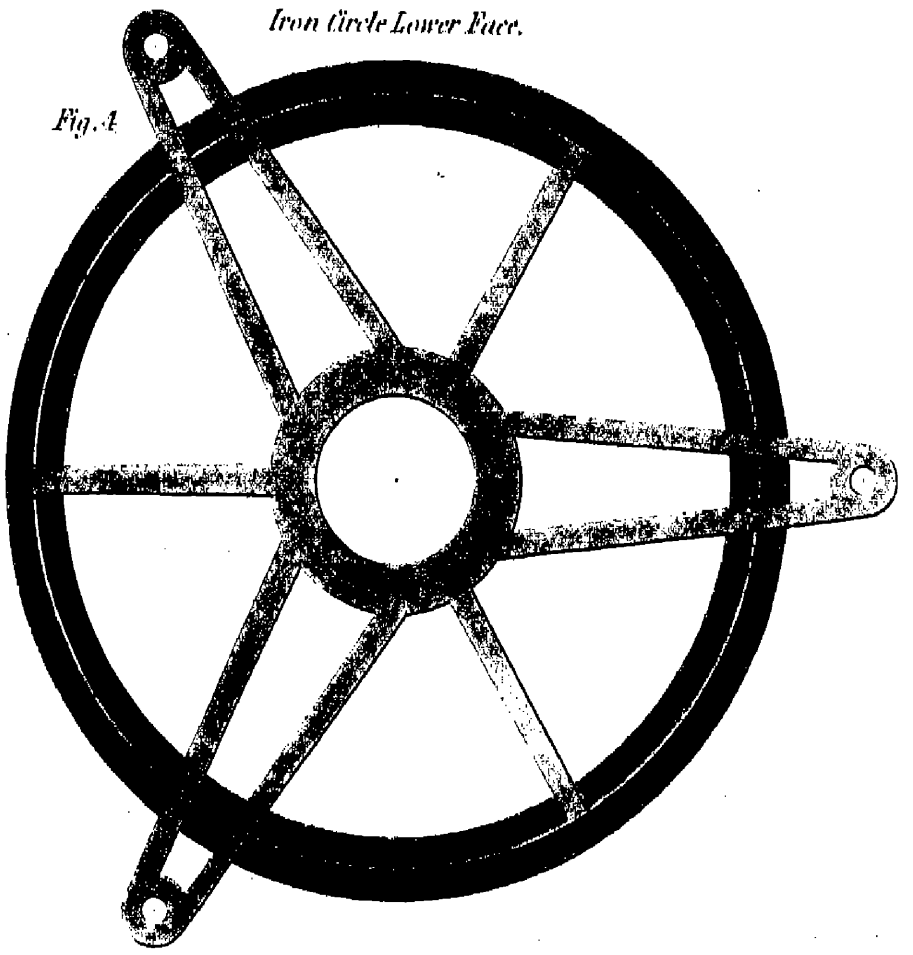
Fig.1



Iron Circle Section. *Fig.6*

Iron Circle Lower Face.

Fig. 4



Brass Circle Lower Face.

Fig. 3

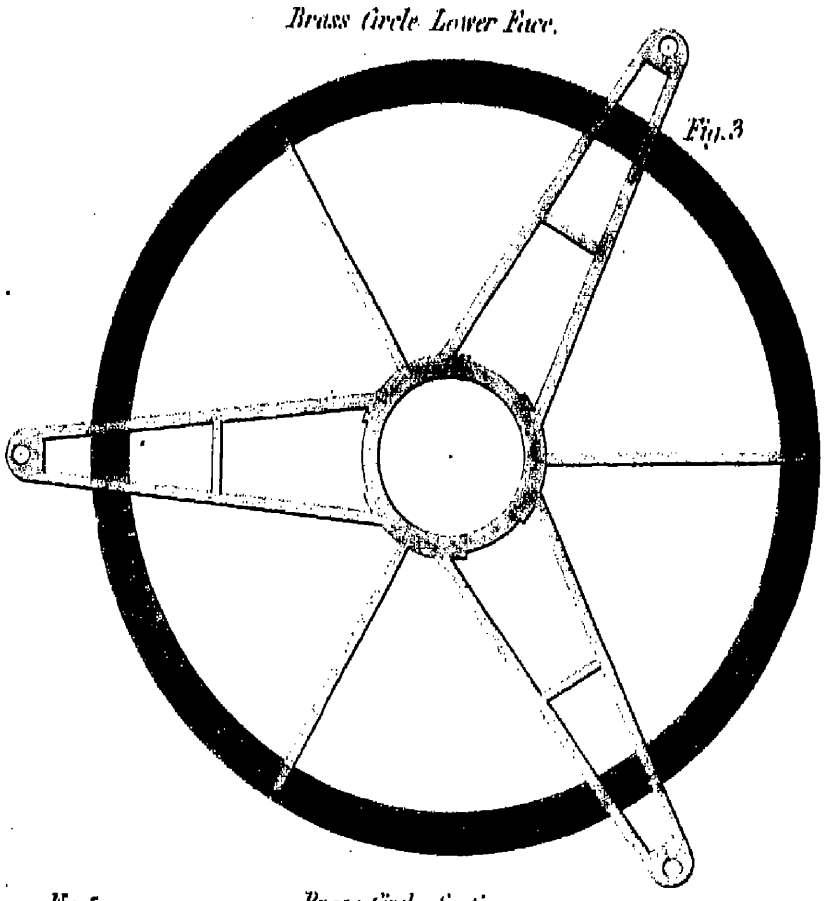


Fig.5 *Brass Circle Section.*

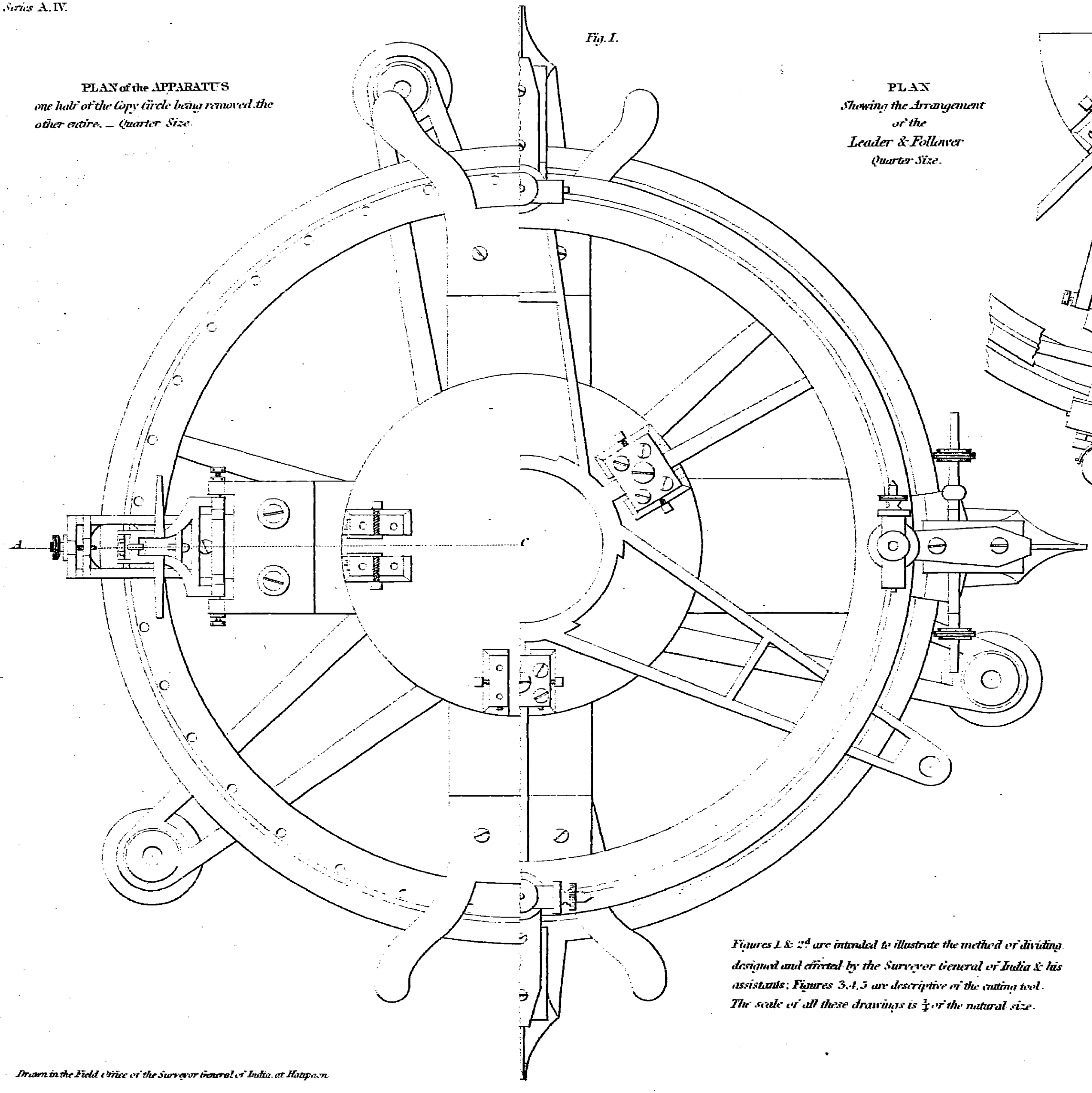
In this plate Figures 2, 4, 6 illustrate the new cast Iron circle designed by the Surveyor General of India, and substituted for the Brass circle which originally came from the workshop of Messrs. Troughton & Simms, & of which figures 1, 3, 5, are illustrative.

Drawn in the Field Office of the Surveyor General of India, at Hatipaun.

Engraved by S. Stockley.

PLAN of the APPARATUS
one half of the Copy Circle being removed the other entire. — Quarter Size.

Fig. 1.



PLAN
Shewing the Arrangement of the
Leader & Follower
Quarter Size.

Fig. 2.

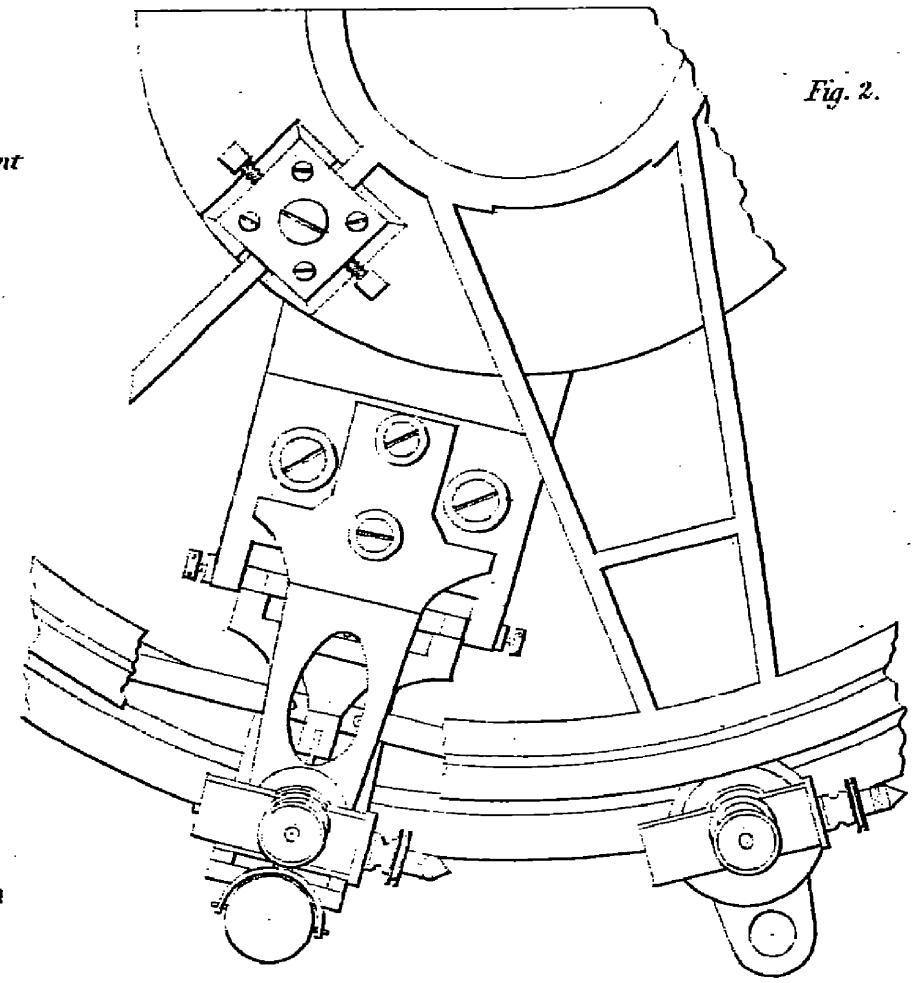


Fig. 3.
Elevation

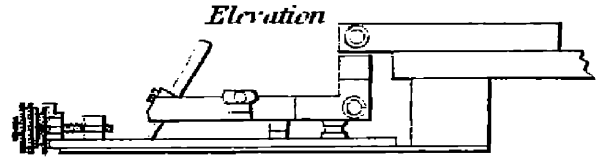
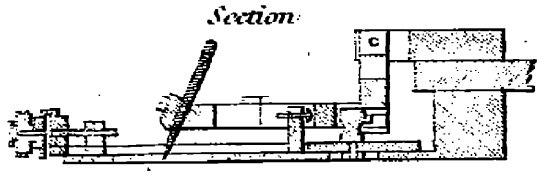
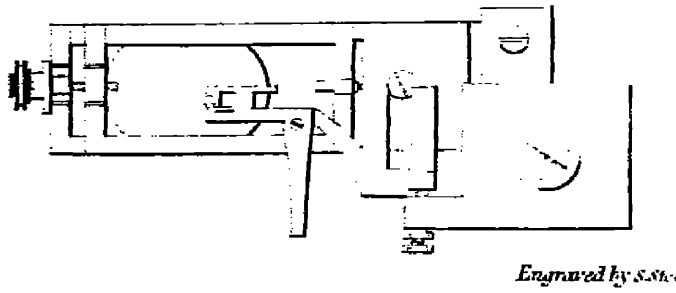


Fig. 4.
Section



Figures 1 & 2d are intended to illustrate the method of dividing designed and directed by the Surveyor General of India & his assistants; Figures 3.4.5 are descriptive of the cutting tool. The scale of all these drawings is ¼ of the natural size.

Plan *Fig. 5.*



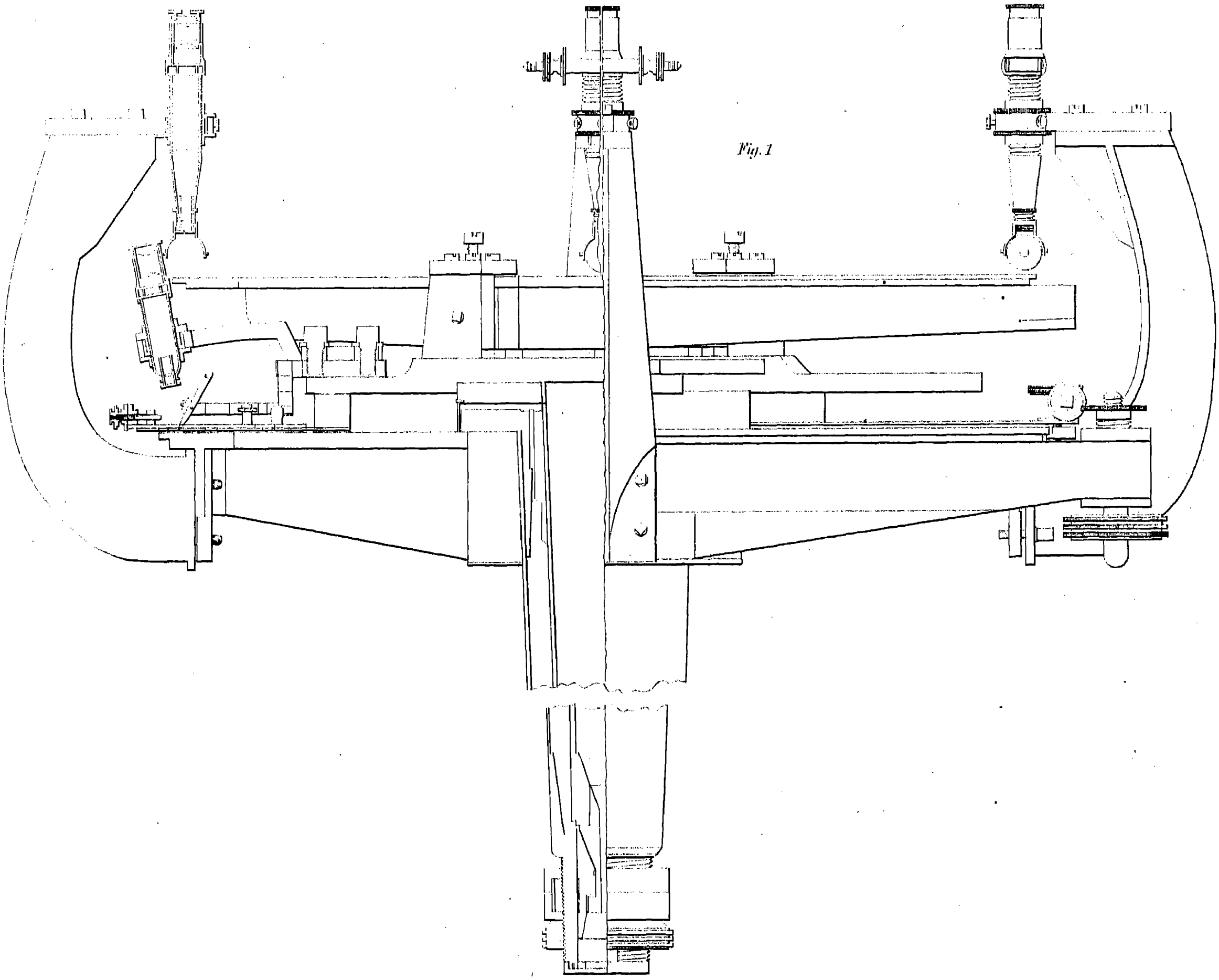
Drawn in the Field Office of the Surveyor General of India. at Hatipaon.

Engraved by S. Stocklay.

DRAWING HALF SECTION AND HALF ELEVATION OF THE DIVIDING APPARATUS DESIGNED BY THE SURVEYOR GENERAL OF INDIA.

Scale Quarter Size.

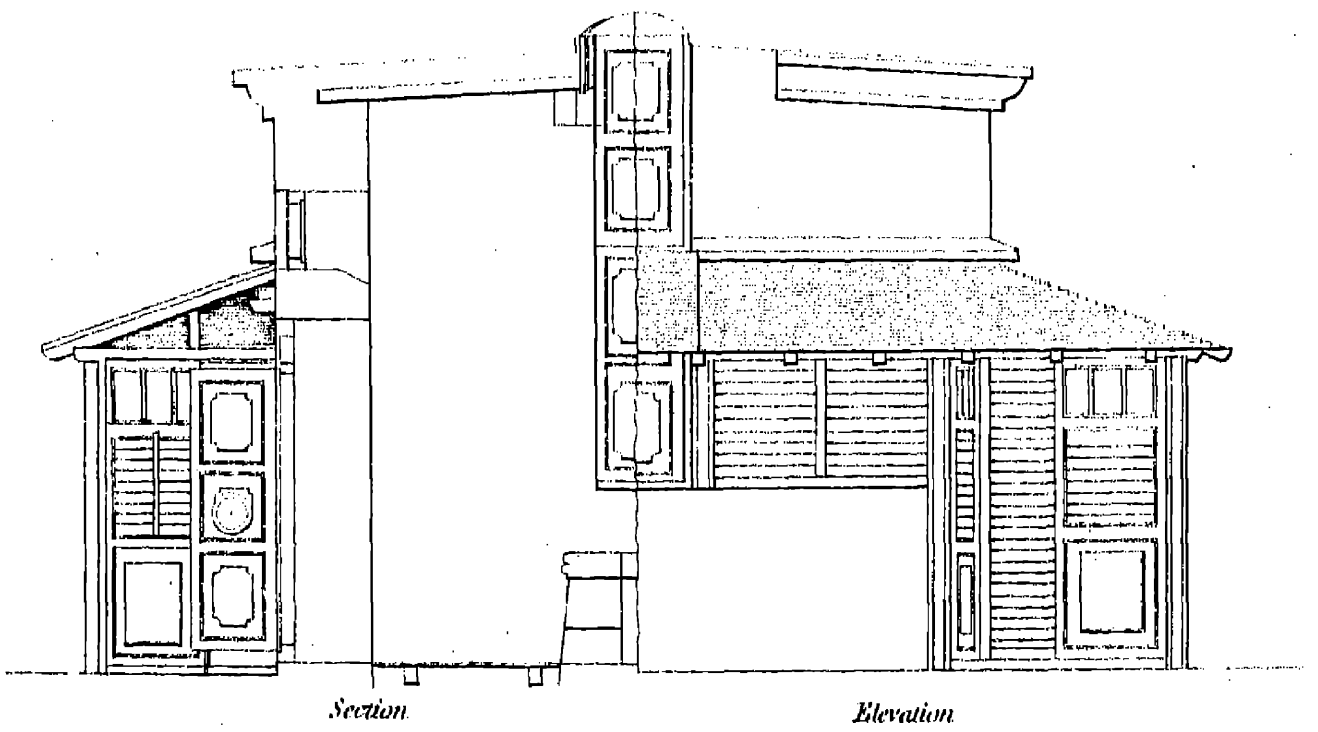
Fig. 1



DIVIDING ROOM AT HATIPAON.

Scale 6 feet = 1 inch.

Fig. 2

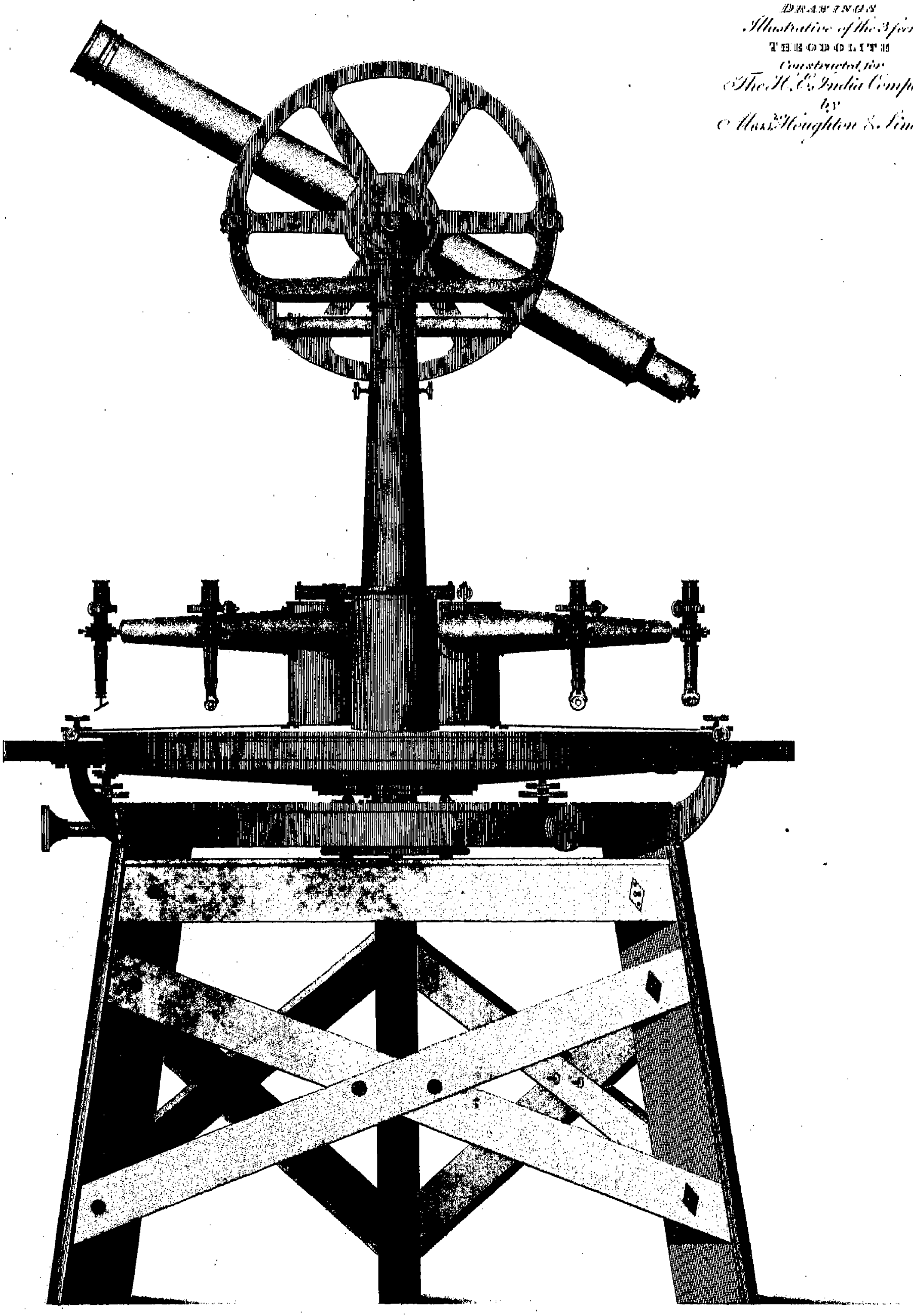


Section *Elevation*

Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

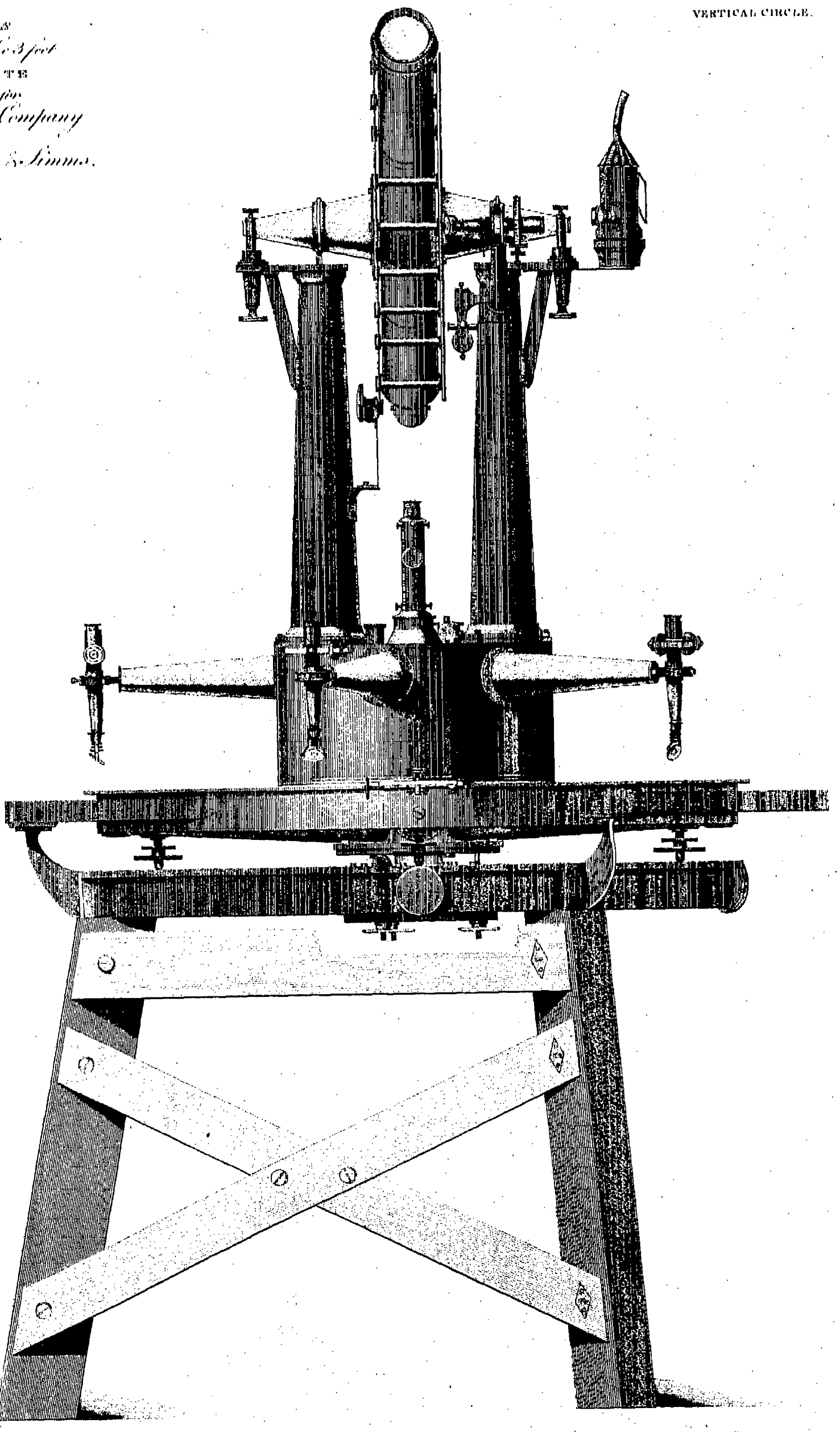
Engraved by S. Stockley.

DRAWINGS
Illustrative of the 3 feet
THEODOLITE
Constructed for
The H.E.I. India Company
by
Messrs. Troughton & Simms.



DRAWINGS
Illustrative of the 3 feet
THEODOLITE
Constructed for
The H.E. India Company
by
Messrs. Troughton & Simms.

ELEVATION IN THE PLANE OF THE
VERTICAL CIRCLE.



Drawn in the Field Office of the Surveyor General of India at Hatipaon.

Engraved by S. Stockley.

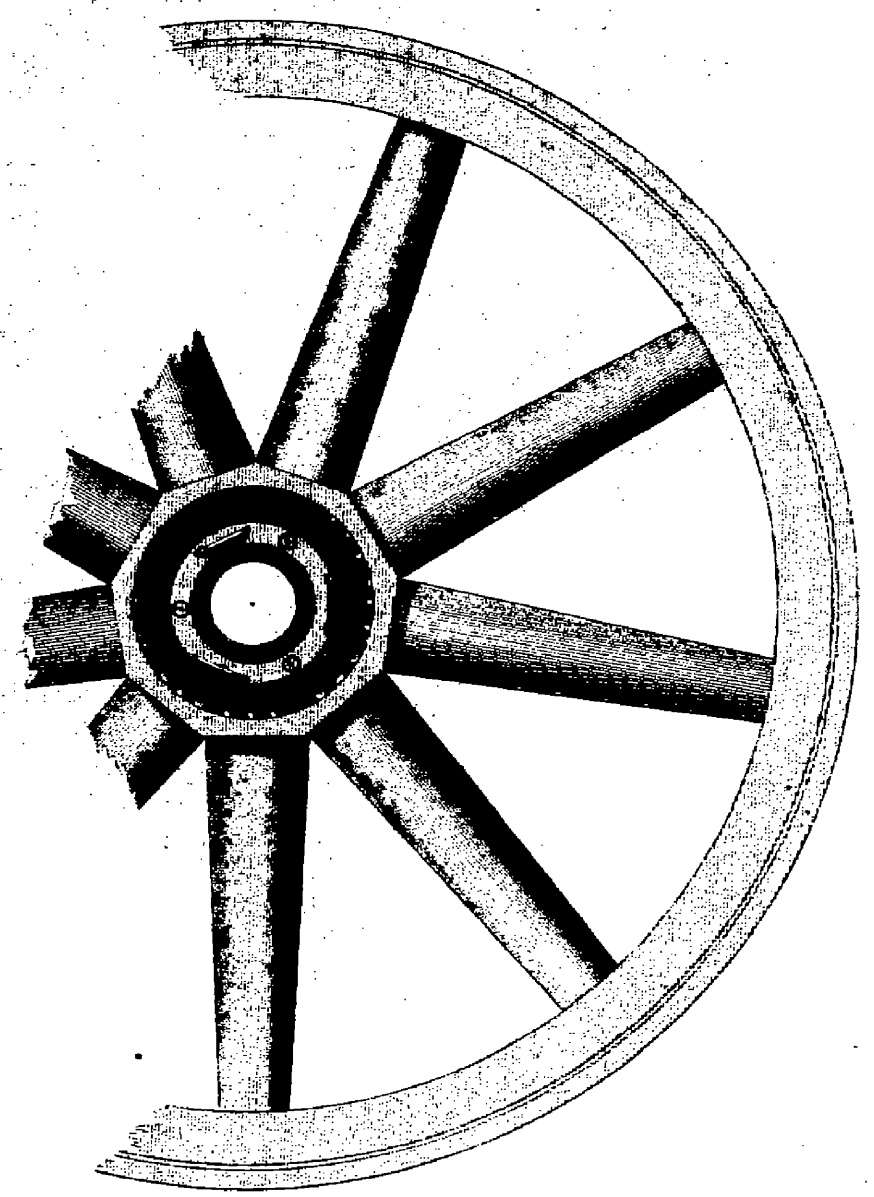
DETAILS OF THE LARGE THEODOLITE, CONSTRUCTED BY

MESSRS TROUGHTON & SIMMS

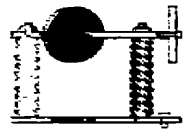
for the

H.E.I.COMPANY.

Plan of the Azimuth circle



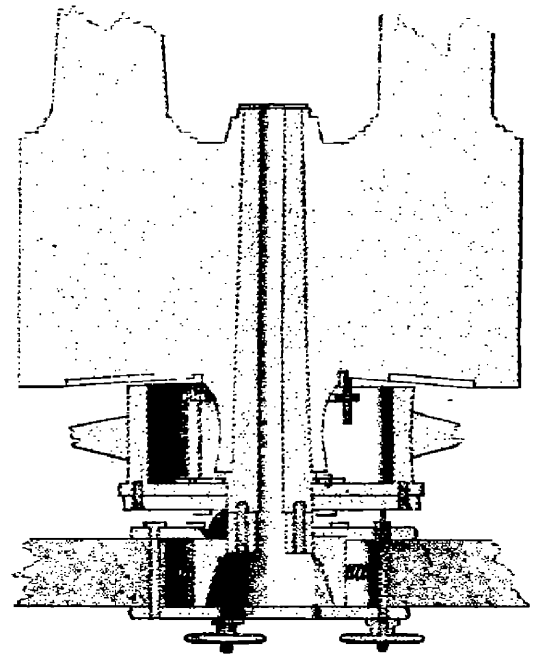
Camel of the Axis



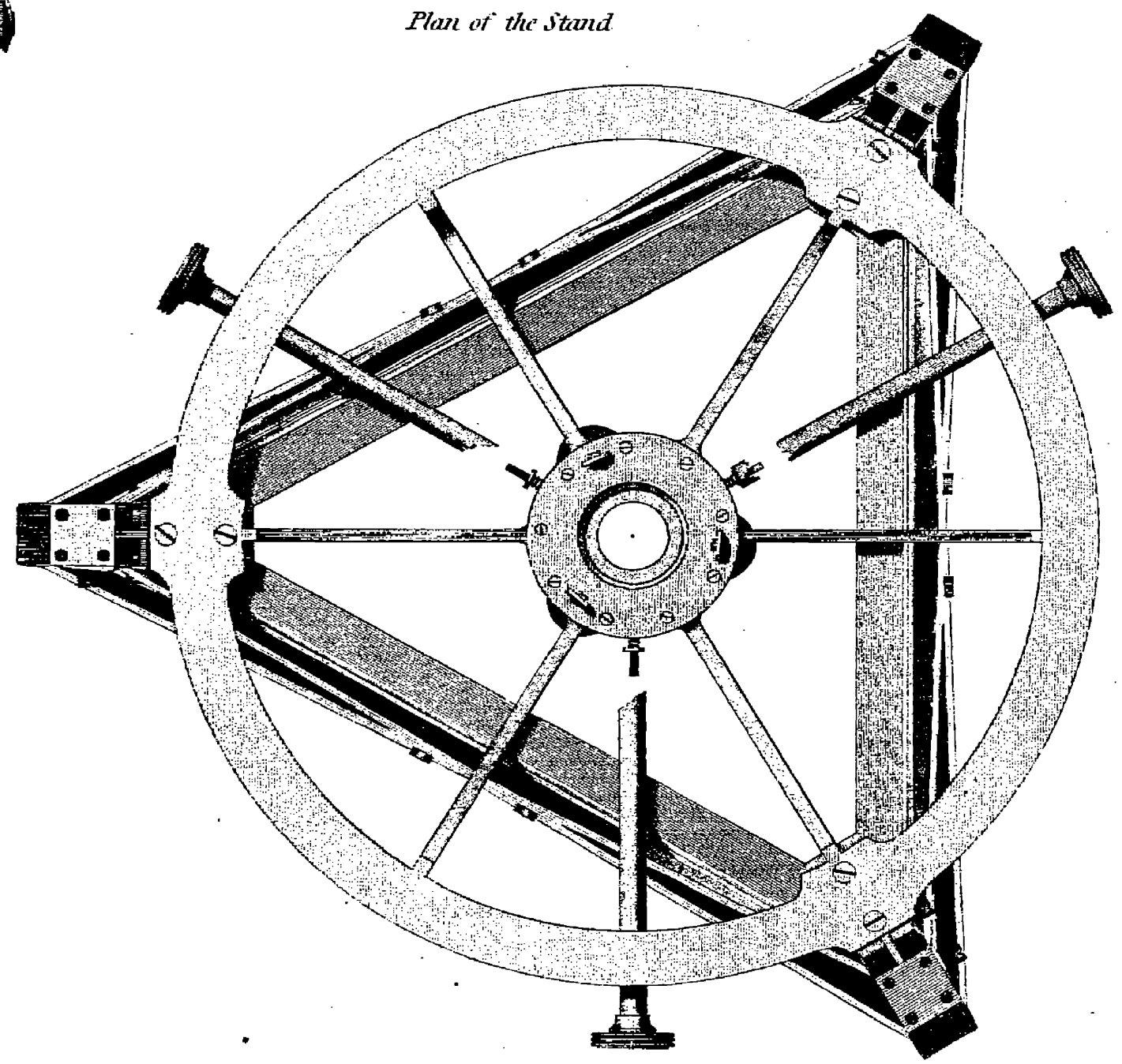
Section

Plan

Section through the Axis



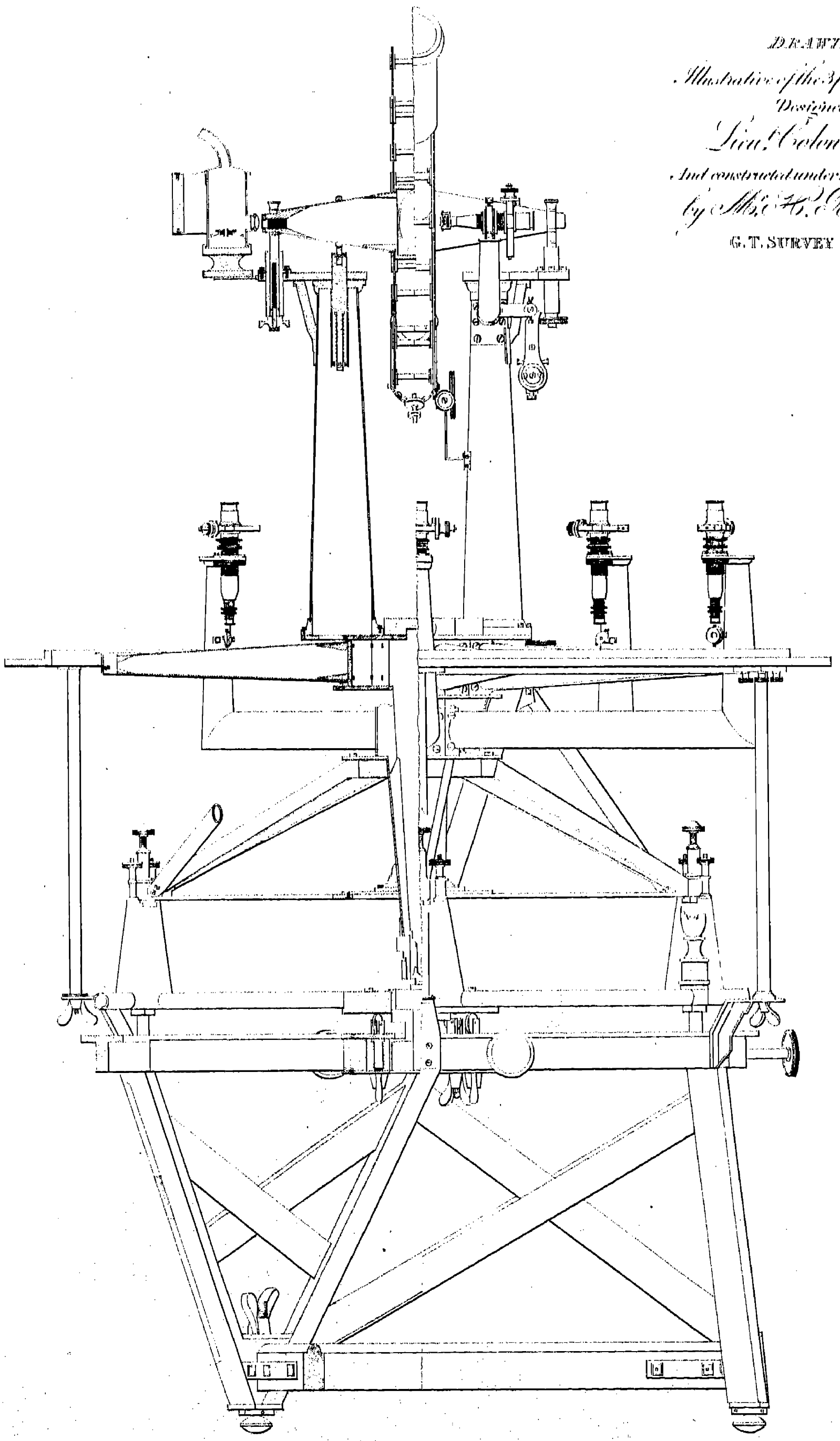
Plan of the Stand



Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Engraved by S.Stoddy.

HALF ELEVATION, HALF SECTION IN THE PLANE OF THE VERTICAL CIRCLE.



DRAWINGS

Illustrative of the 3 feet Theodolite,

Designed by

Sir. George Everest,

And constructed under his superintendence

by Mr. A. Barrow for the

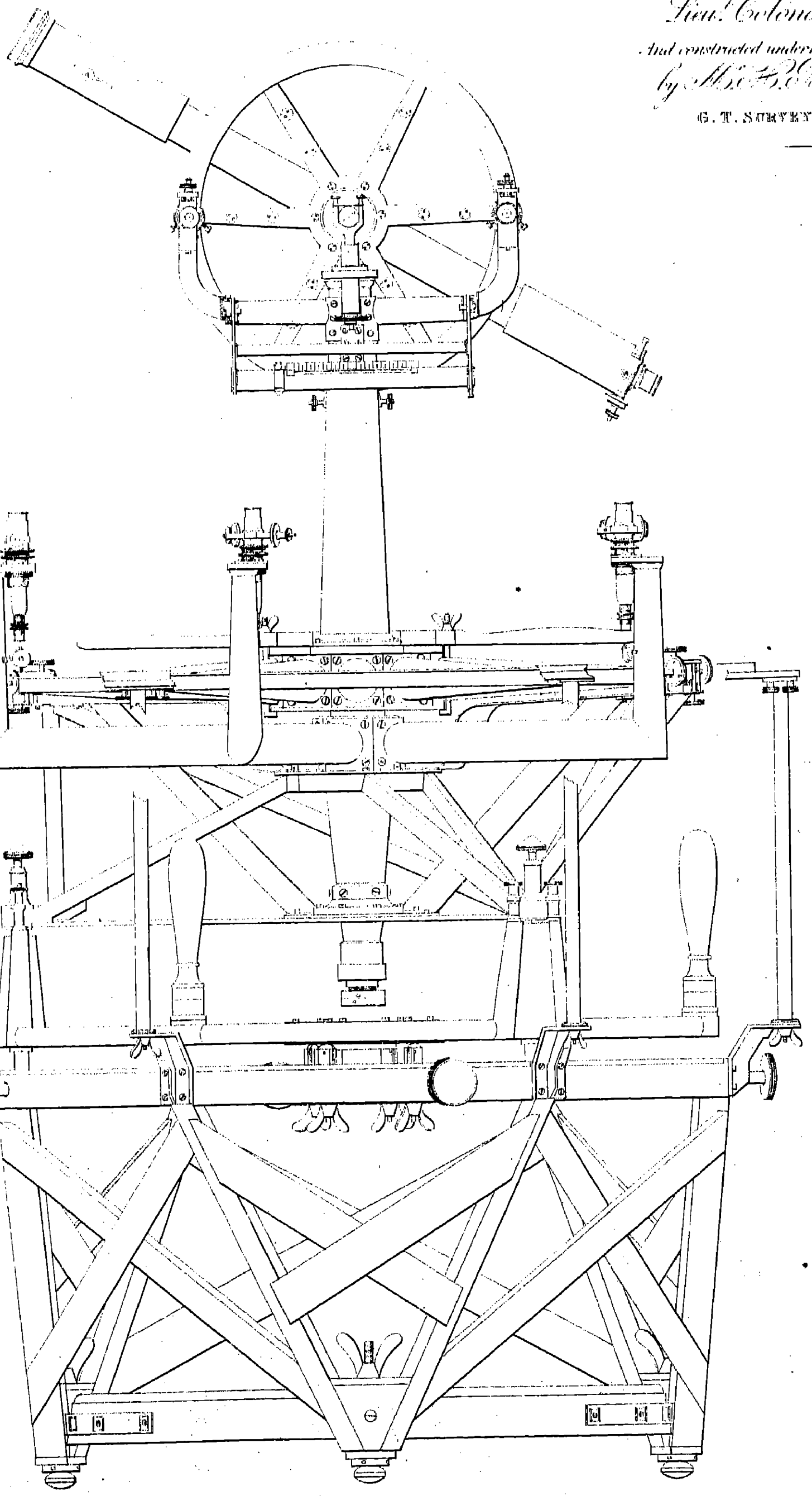
G. T. SURVEY OF INDIA.

Drawn in the Field Office of the Surveyor General of India, at Hattipaon.

Engraved by S. Stuckley.

ELEVATION SHEWING THE FACE OF THE VERTICAL CIRCLE.

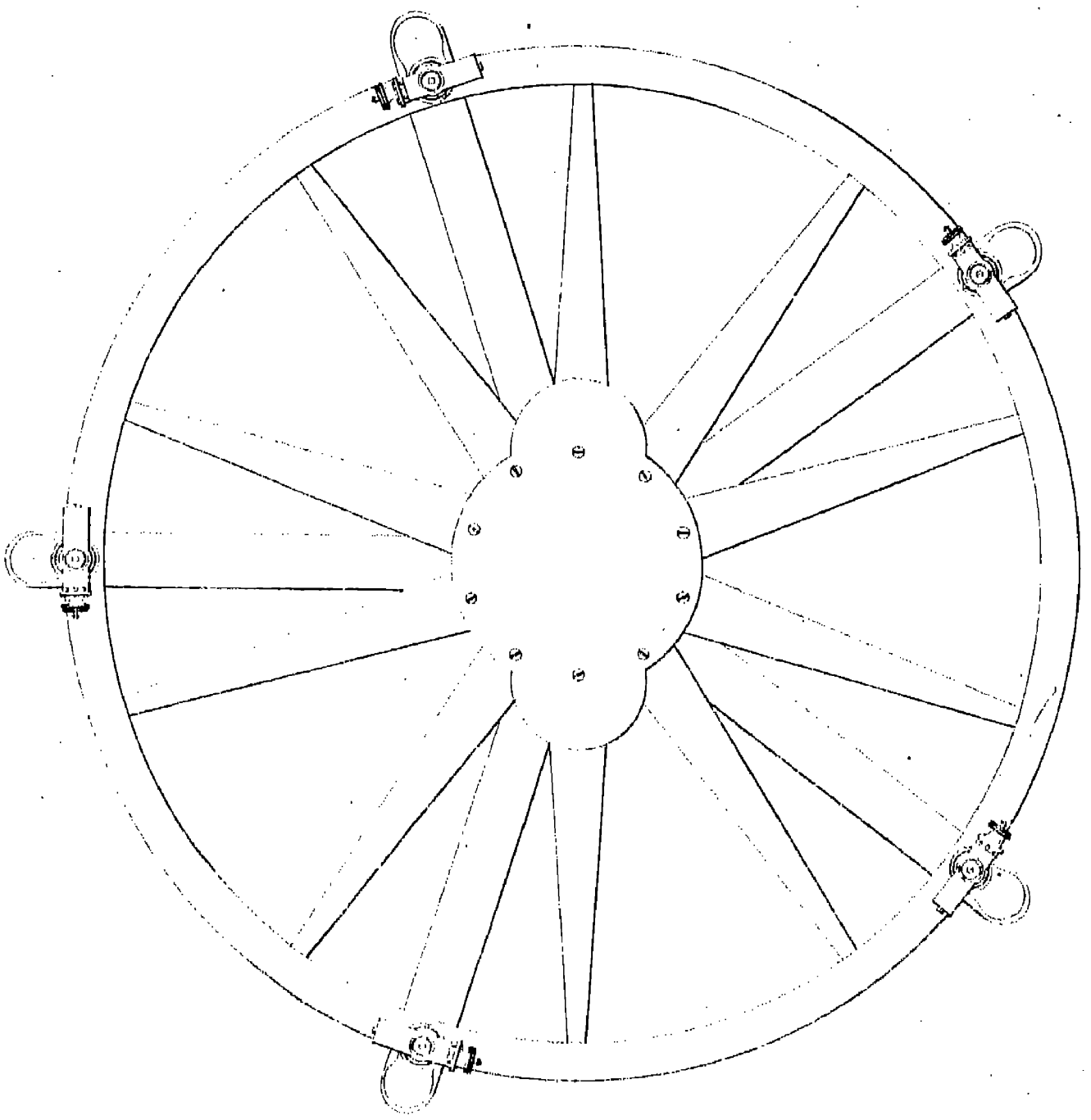
DRAWINGS
Illustrative of the 3 feet Theodolite,
Designed by
Lieut.t Colonel Everest.
And constructed under his superintendence
by Mess.rs T. & C. Barrow for the
G. T. SURVEY OF INDIA.



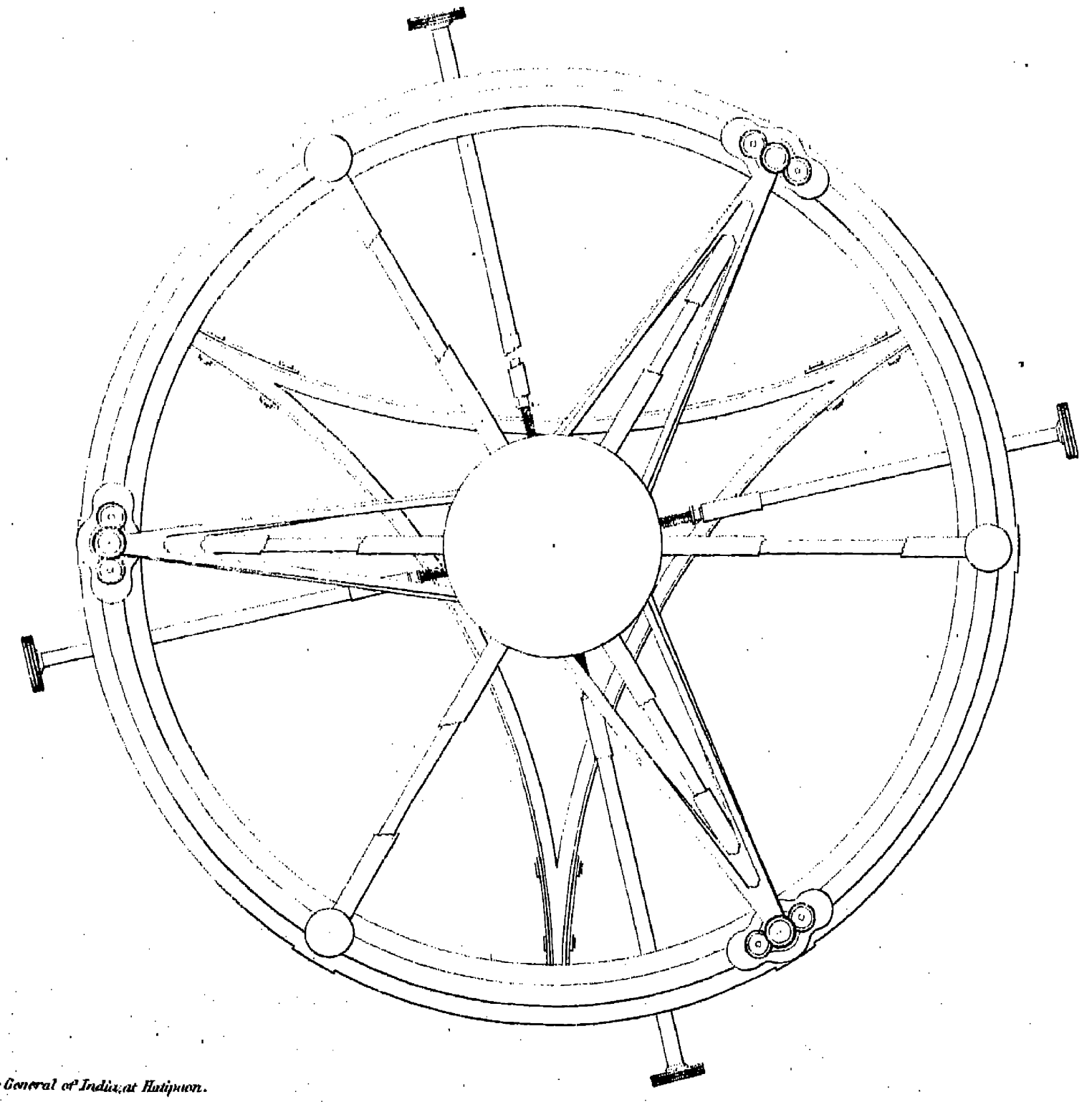
Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Engraved by S. Stockley.

PLAN OF THE AZIMUTH CIRCLE.



PLAN OF THE LOWER FRAME AND STAND.



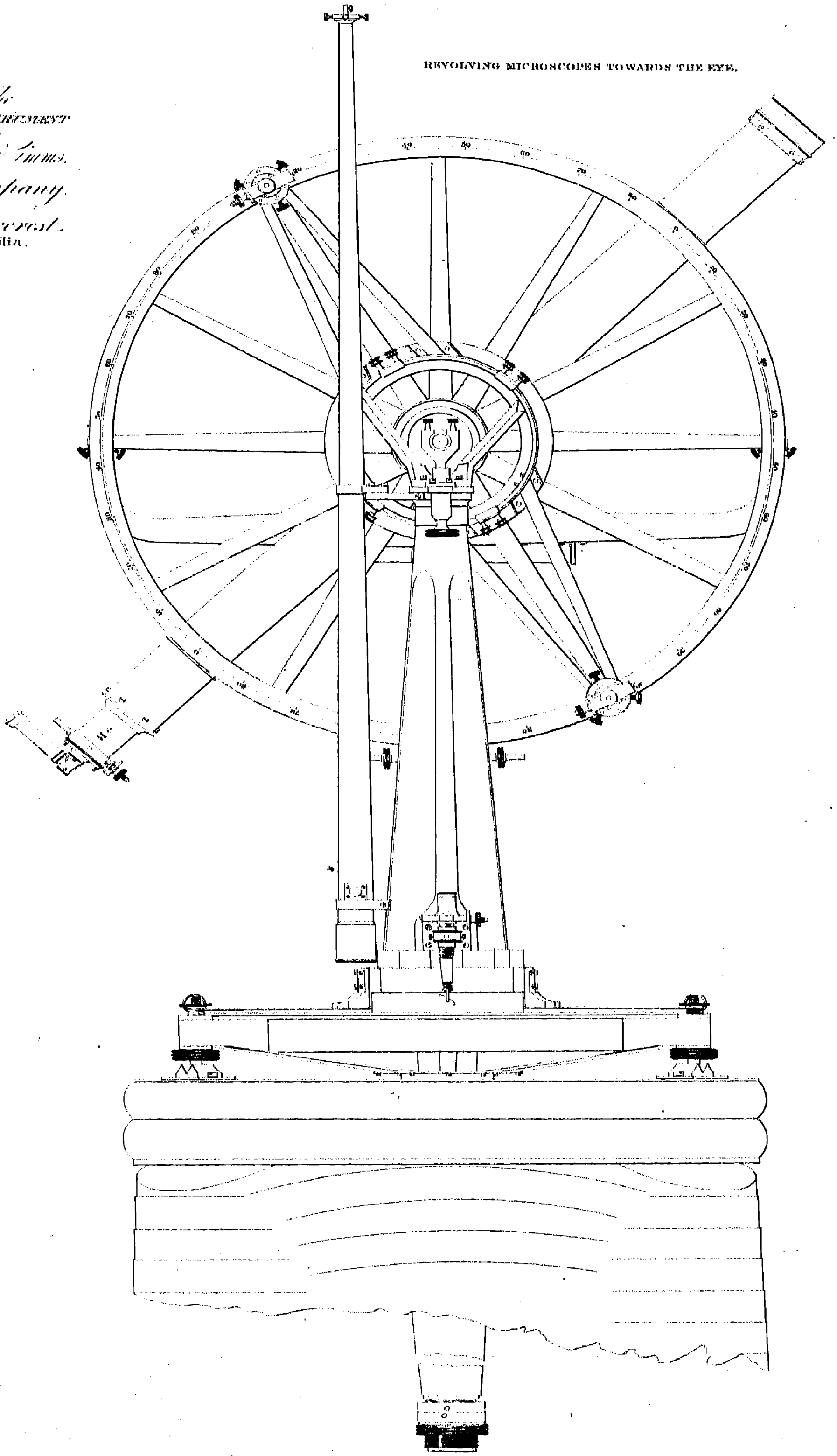
Drawn in the Field Office of the Surveyor General of India, at Hutipoor.

Engraved by S. Stockley.

Elevation of the ASTRONOMICAL INSTRUMENT

Constructed by
Messrs Troughton & Simms.
for the
Honble E.I. Company.
and altered by
Lieut Colonel Everest.
Surveyor General of India.

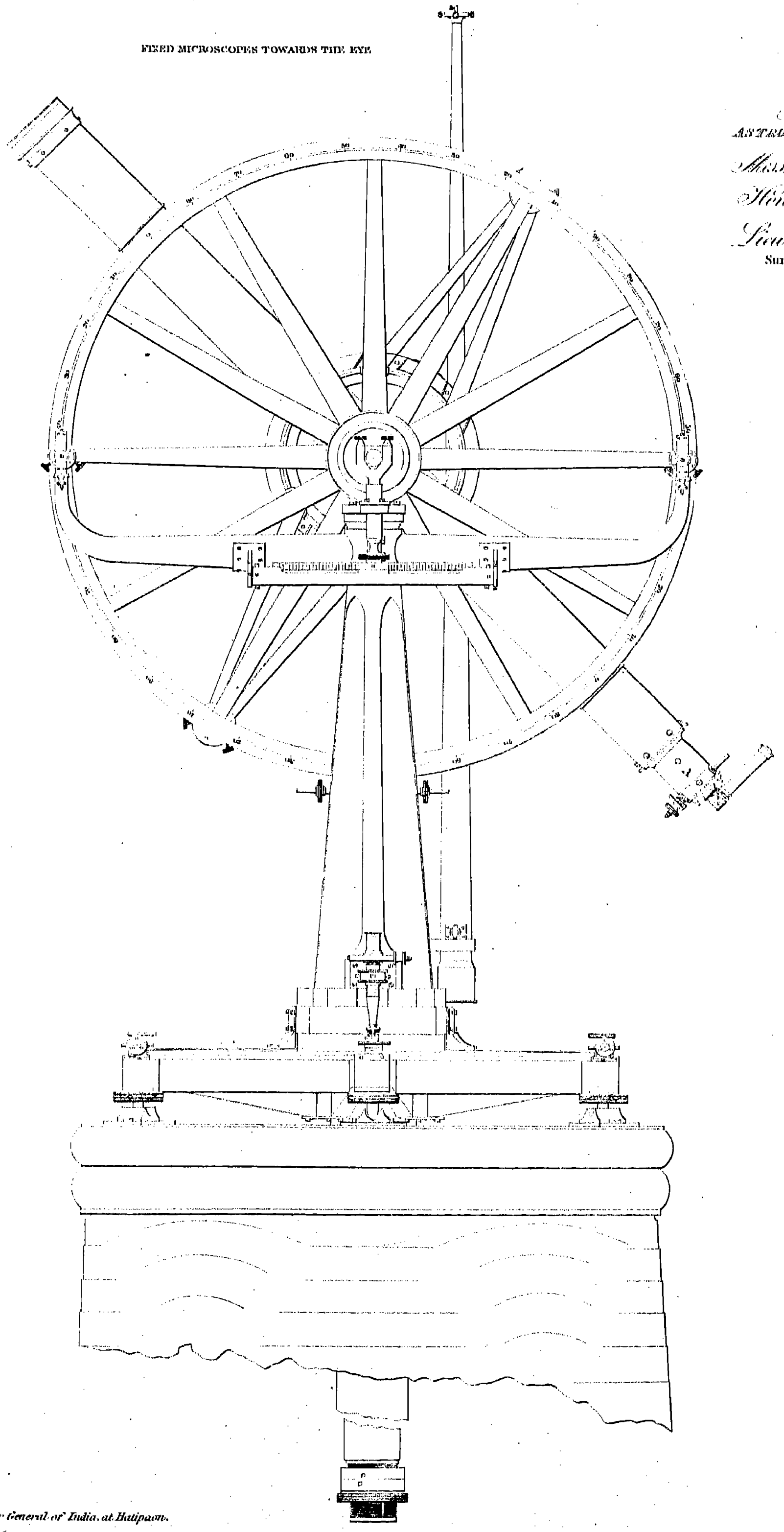
REVOLVING MICROSCOPES TOWARDS THE EYE.



Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Series D.II.

FIXED MICROSCOPES TOWARDS THE EYE



Elevation of a
ASTRONOMICAL INSTR
Constructed by
Messrs Troughton &
for the
Hon.ble E. I. Co
and altered by
Lieut. Colonel E
Surveyor General o

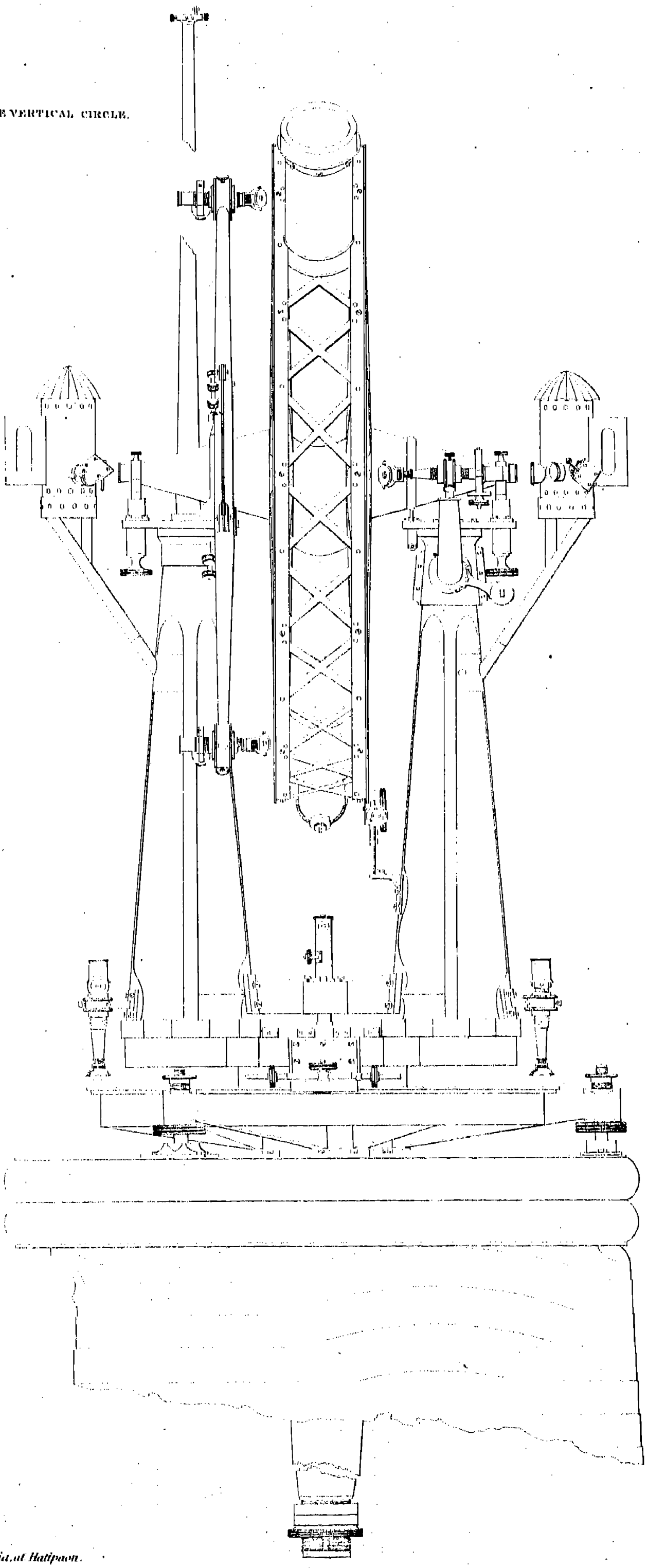
Drawn in the Field Office of the Surveyor General of India, at Hutipaon.

Engrave

Series D.III

EYE IN THE PLANE OF THE VERTICAL CIRCLE.

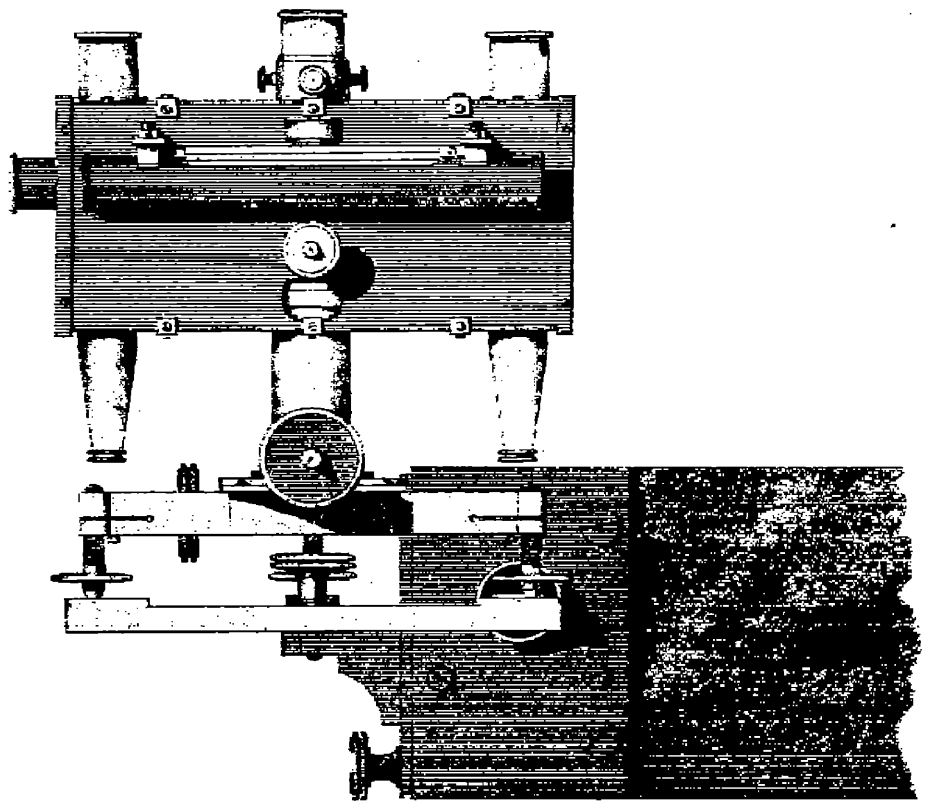
Section of
ASTRONOMICAL T
Constructed
Messrs Troughton
for the
Hon.ble E. I. C.
and altered
Lieut Colonel
Surveyor General



Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

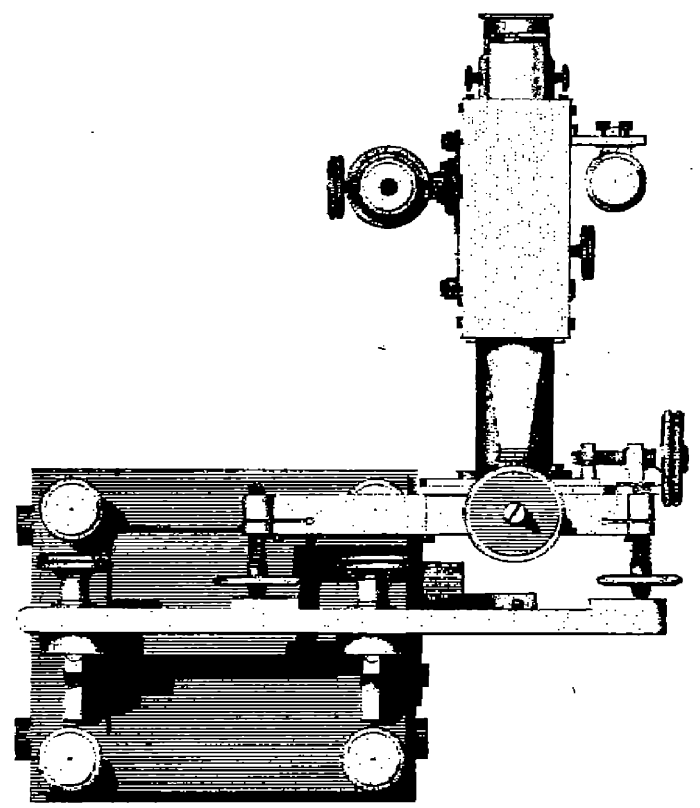
PLAN, ELEVATIONS AND SECTIONS ILLUSTRATIVE OF THE COMPENSATION BAR AND MICROSCOPE.

Front Elevation



Quarter Size

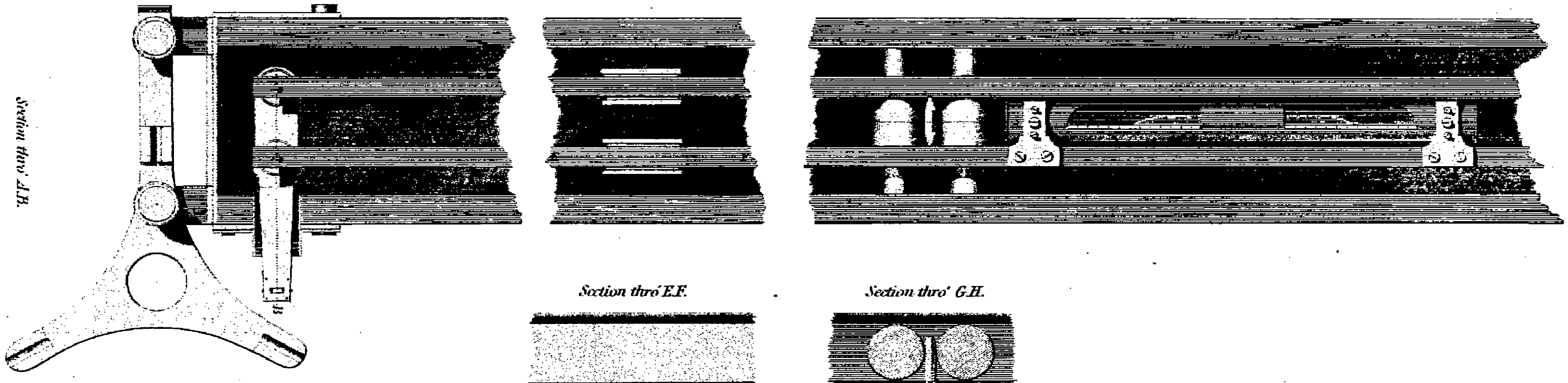
End Elevation



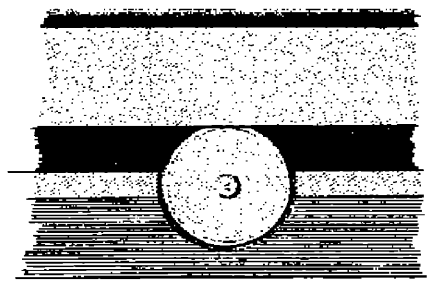
Side Elevation of Iron Bar & Section thro' Tongue at C.D.

Section thro' A.B.

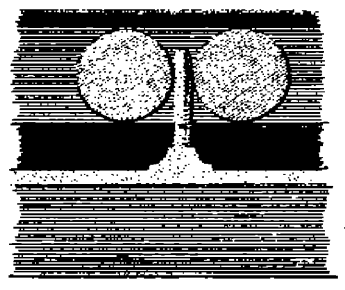
Plan of Compensation Bar with Brass Support for Microscope.



Section thro' E.F.



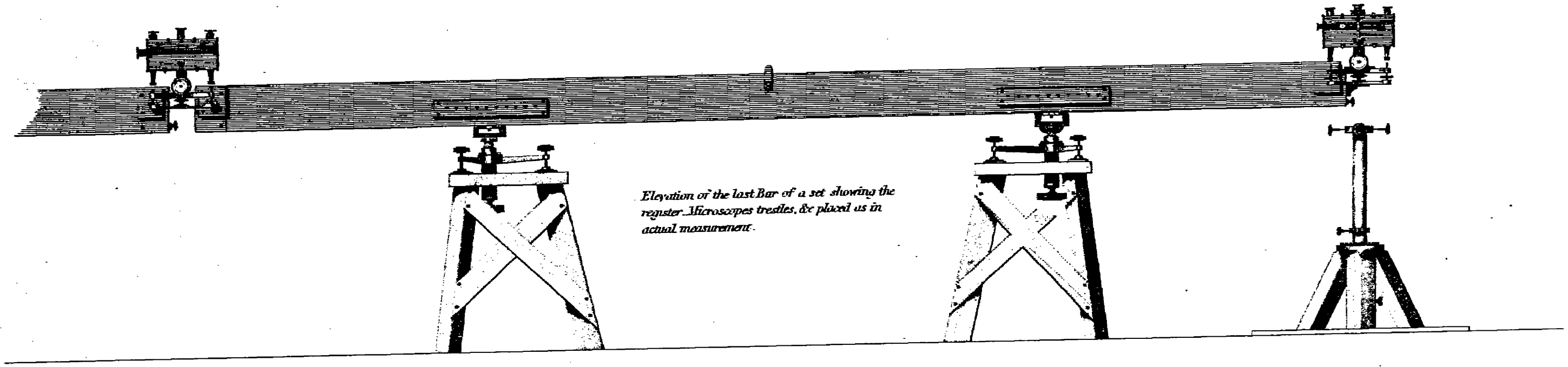
Section thro' G.H.



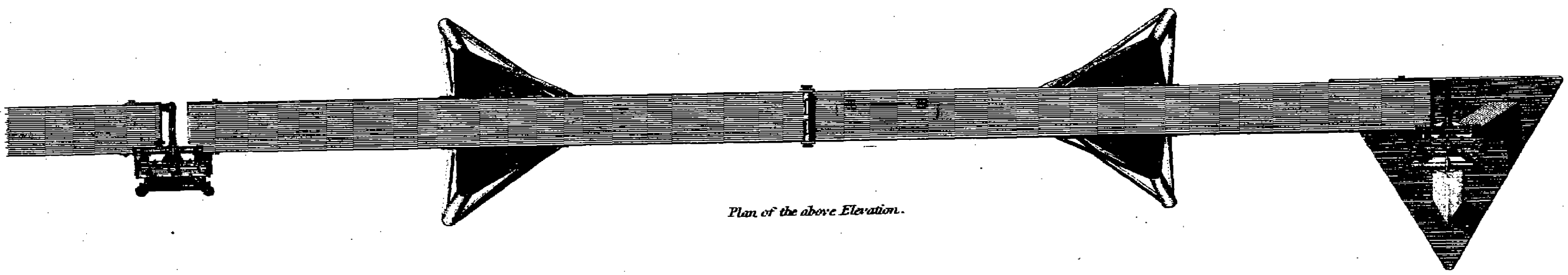
Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Engraved by S.Stuckley.

BASE LINE APPARATUS.

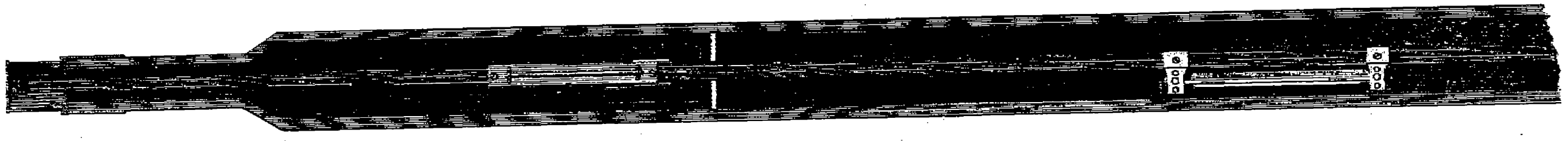


Elevation of the last Bar of a set showing the register Microscopes trestles, &c placed as in actual measurement.

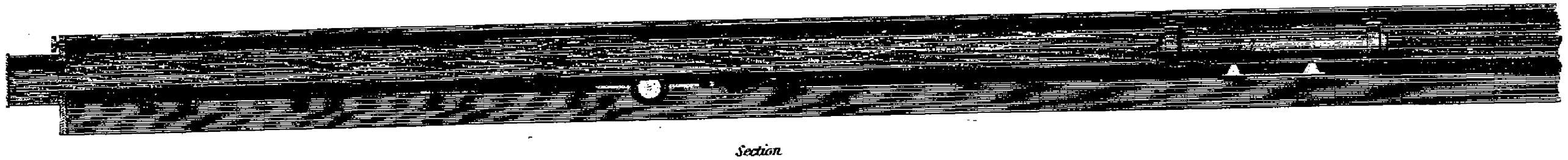


Plan of the above Elevation.

Iron Standard Bar.



Plan.

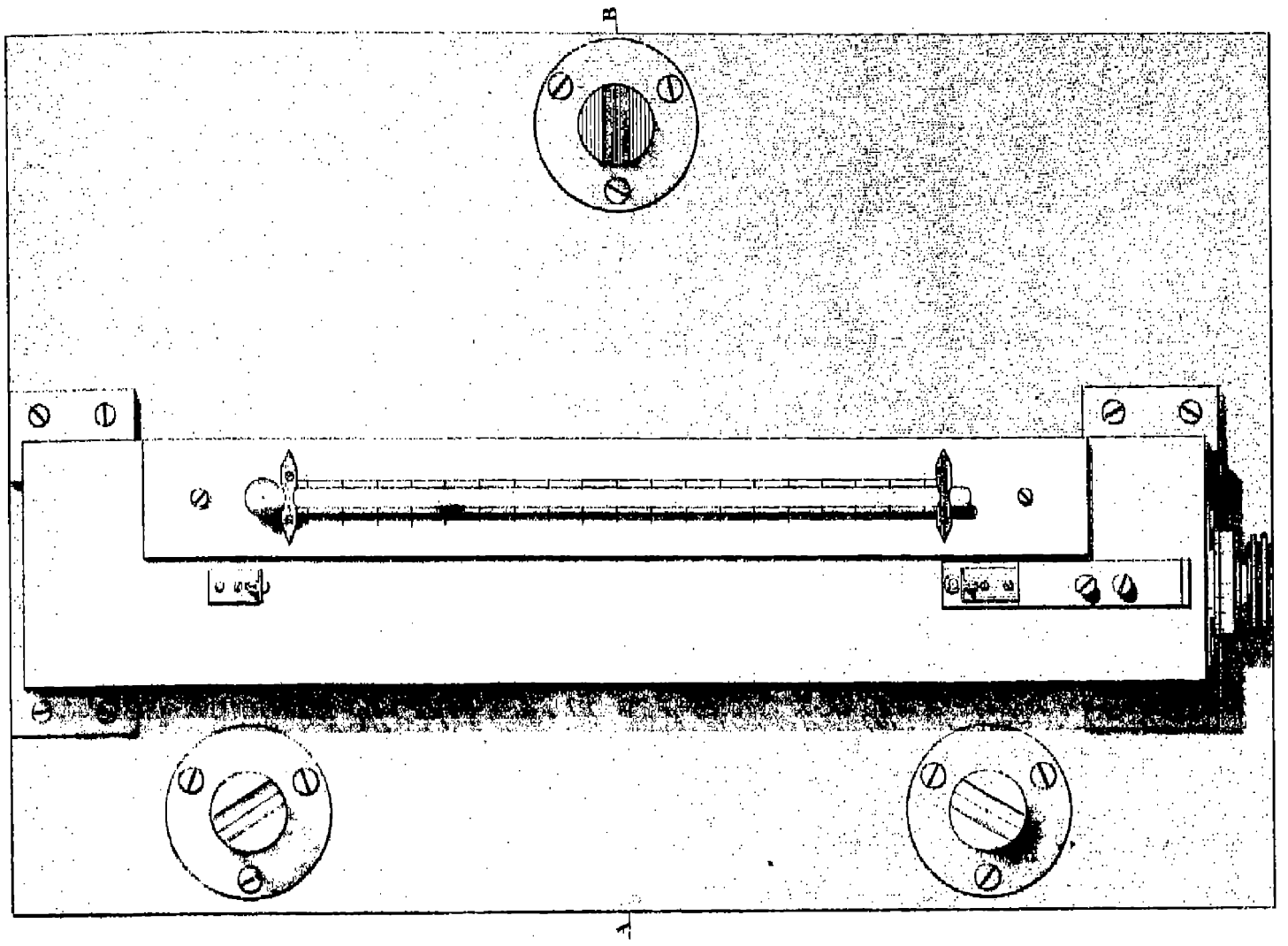


Section

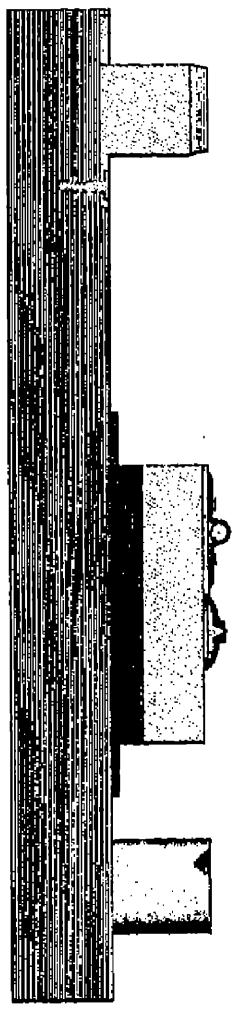
Engraved by S. Stockdale.

Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

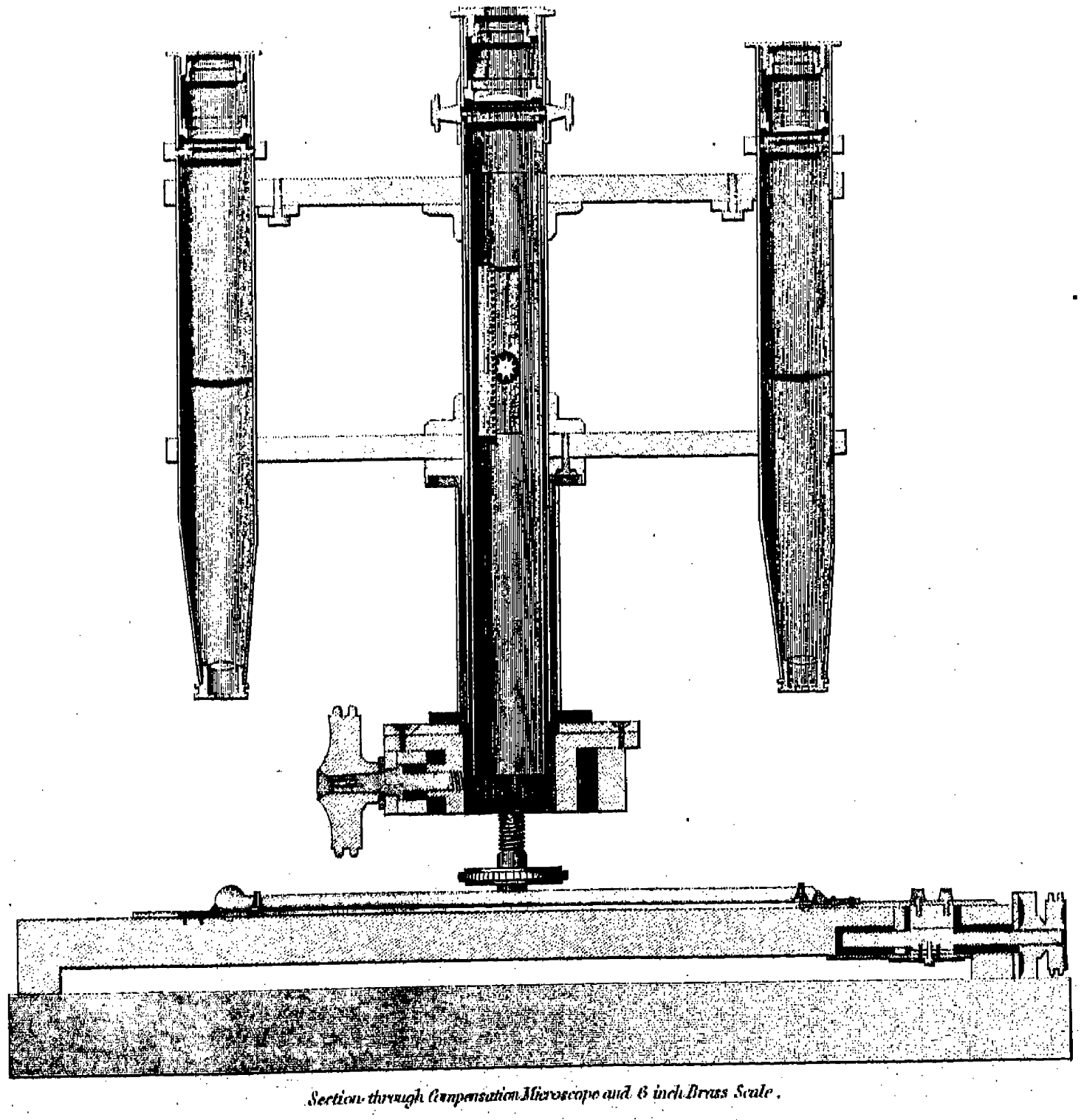
DRAWINGS ILLUSTRATIVE OF THE COMPENSATION MICROSCOPE AND 6 INCH BRASS SCALE AS EMPLOYED IN THE GREAT TRIGONOMETRICAL SURVEY OF INDIA.



Plan of 6 inch Brass Scale and the Microscope applied to it as designed by the Surveyor General of India.



Section through line A.B.



Section through Compensation Microscope and 6 inch Brass Scale.

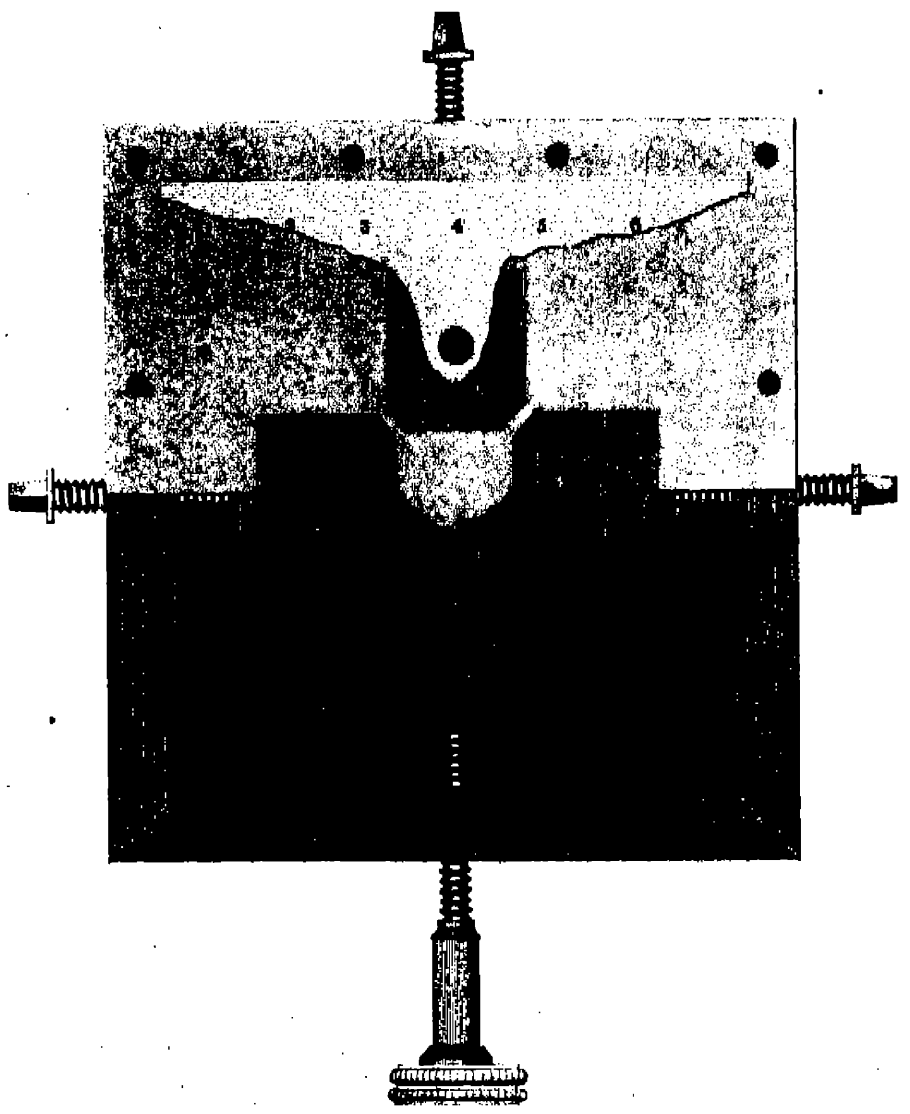
Drawn in the Field Office of the Surveyor General of India at Hatipoor.

Engraved by S. Stockley.

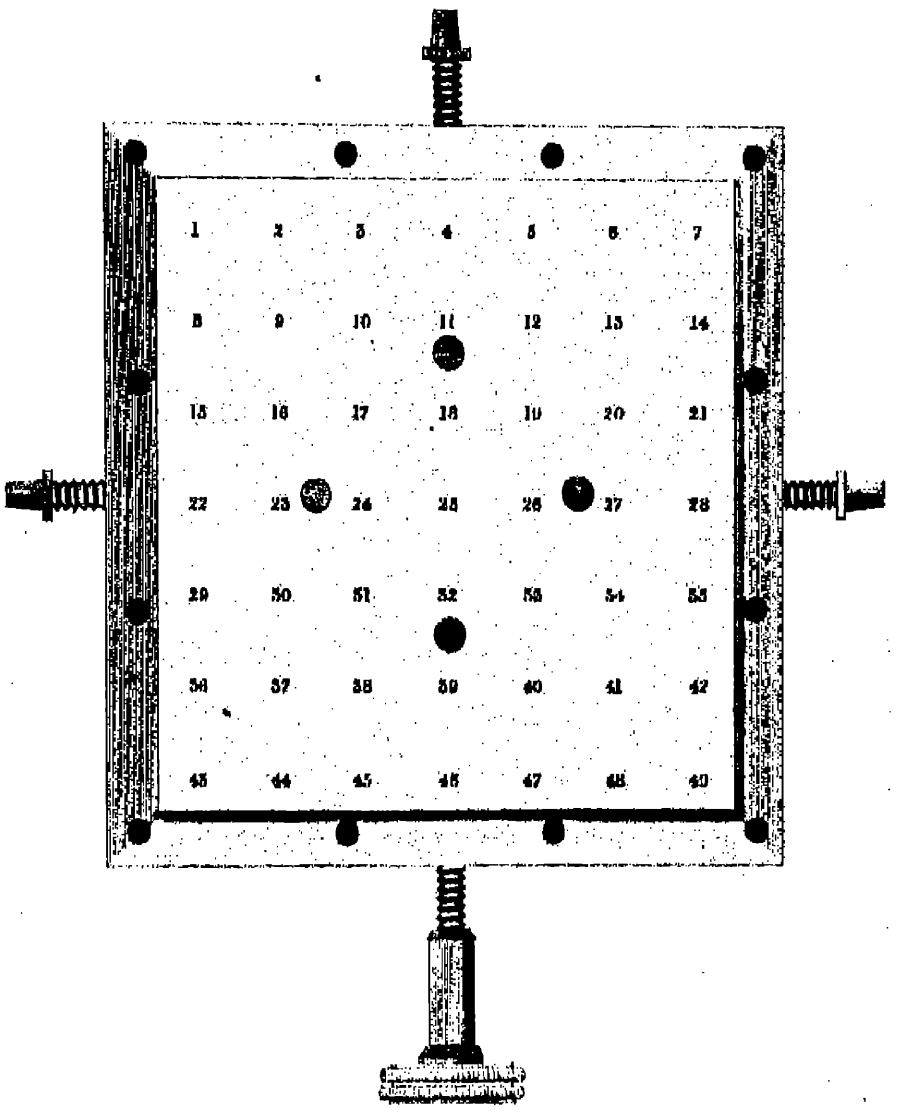
DRAWINGS ILLUSTRATIVE OF THE FIGURED REGISTER HEAD DESIGNED BY THE SURVEYOR GENERAL OF INDIA.

TO BE USED WITH THE COMPENSATION BAR APPARATUS.

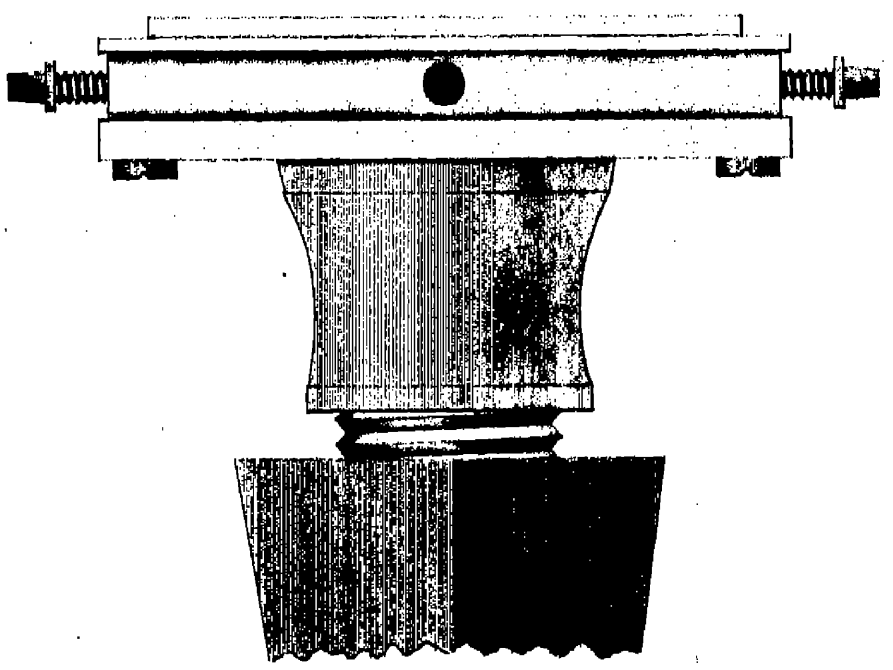
Plan of the Register Head, parts of the upper surface and of the plate below it being removed.



Plan of the Register Head Upper Surface.



Elevation of the Register Head with part of the Iron Pin to which it is attached.



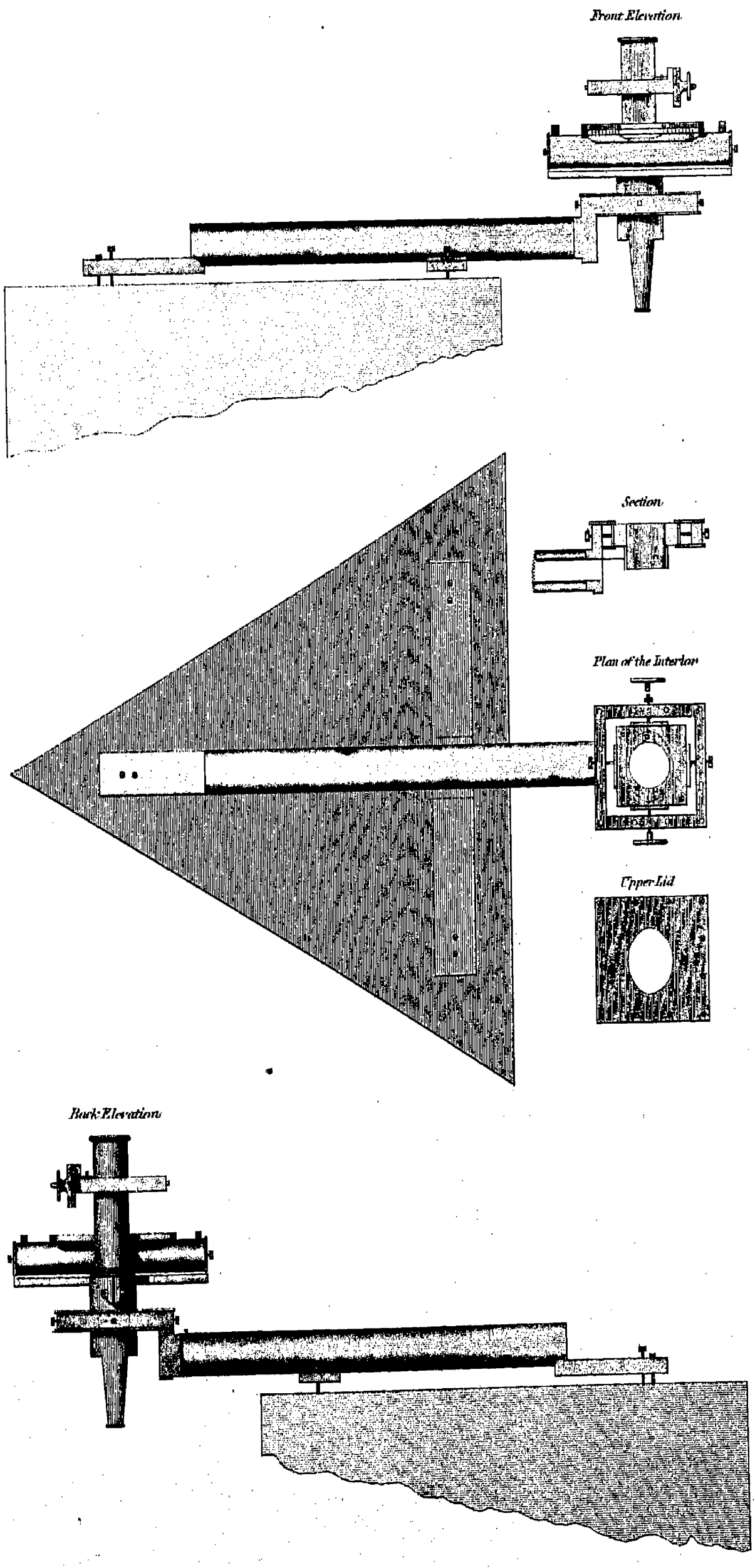
Two thirds Natural Size.

Drawn in the Field Office of the Surveyor General of India, at Hattipaon.

Engraved by S. Stuckley.

DRAWINGS ILLUSTRATIVE OF THE METHOD OF COMPARING THE COMPENSATION BARS WITH THE IRON STANDARD: DESIGNED BY THE SURVEYOR GENERAL OF INDIA.

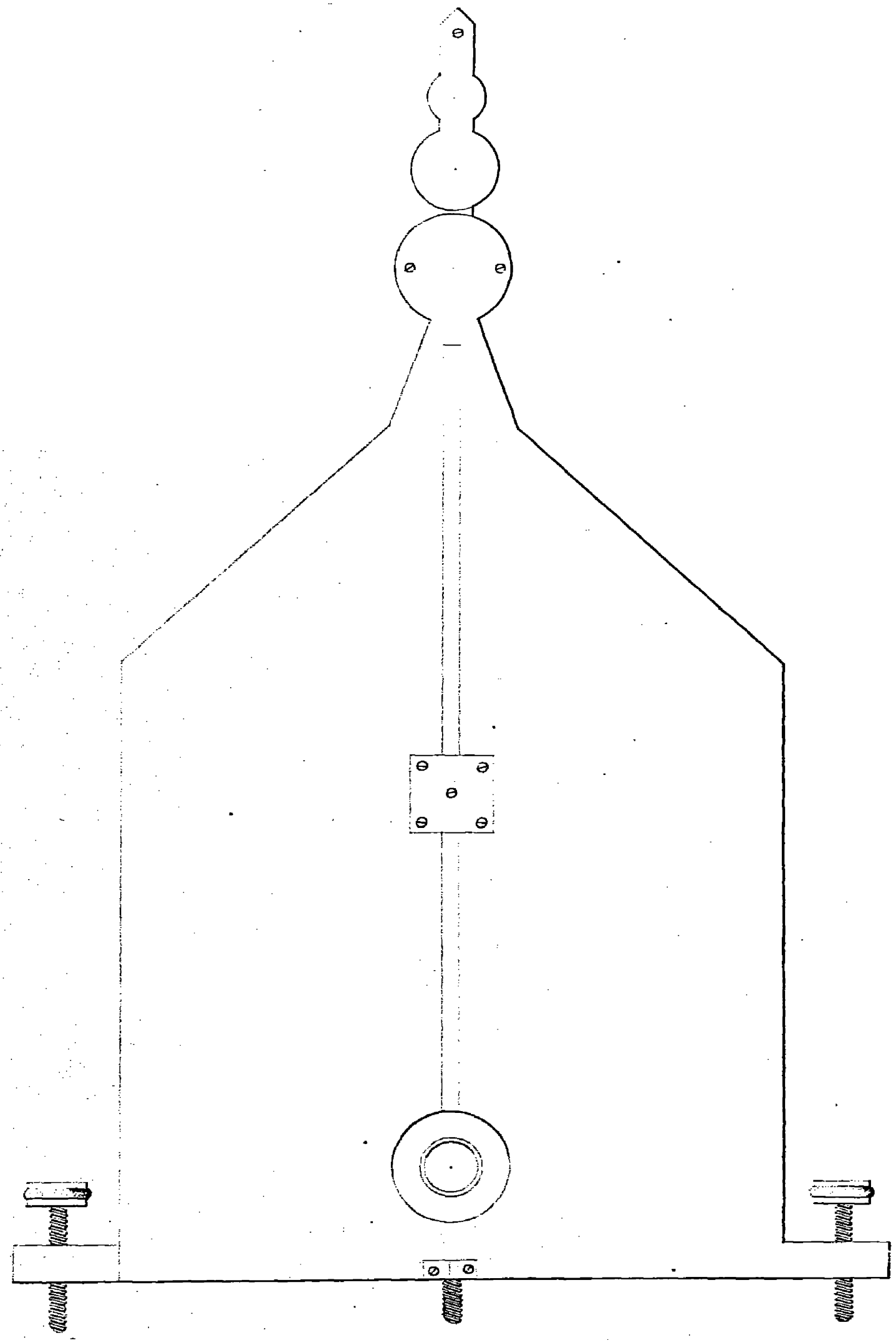
Quarter Size.



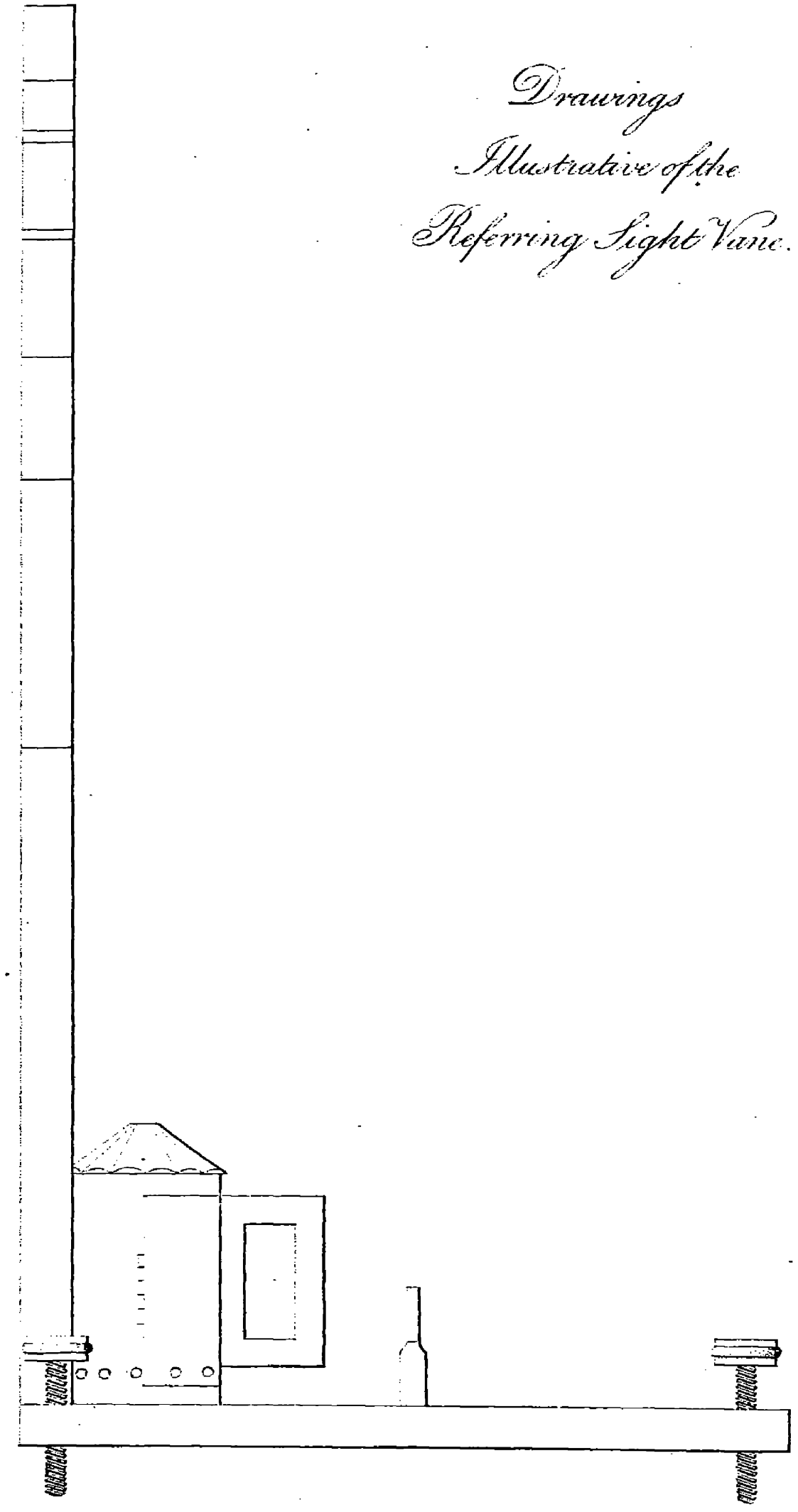
Drawn in the Field Office of the Surveyor General of India at Hatipaon.

Engraved by S. Stockley.

Front Elevation



End Elevation

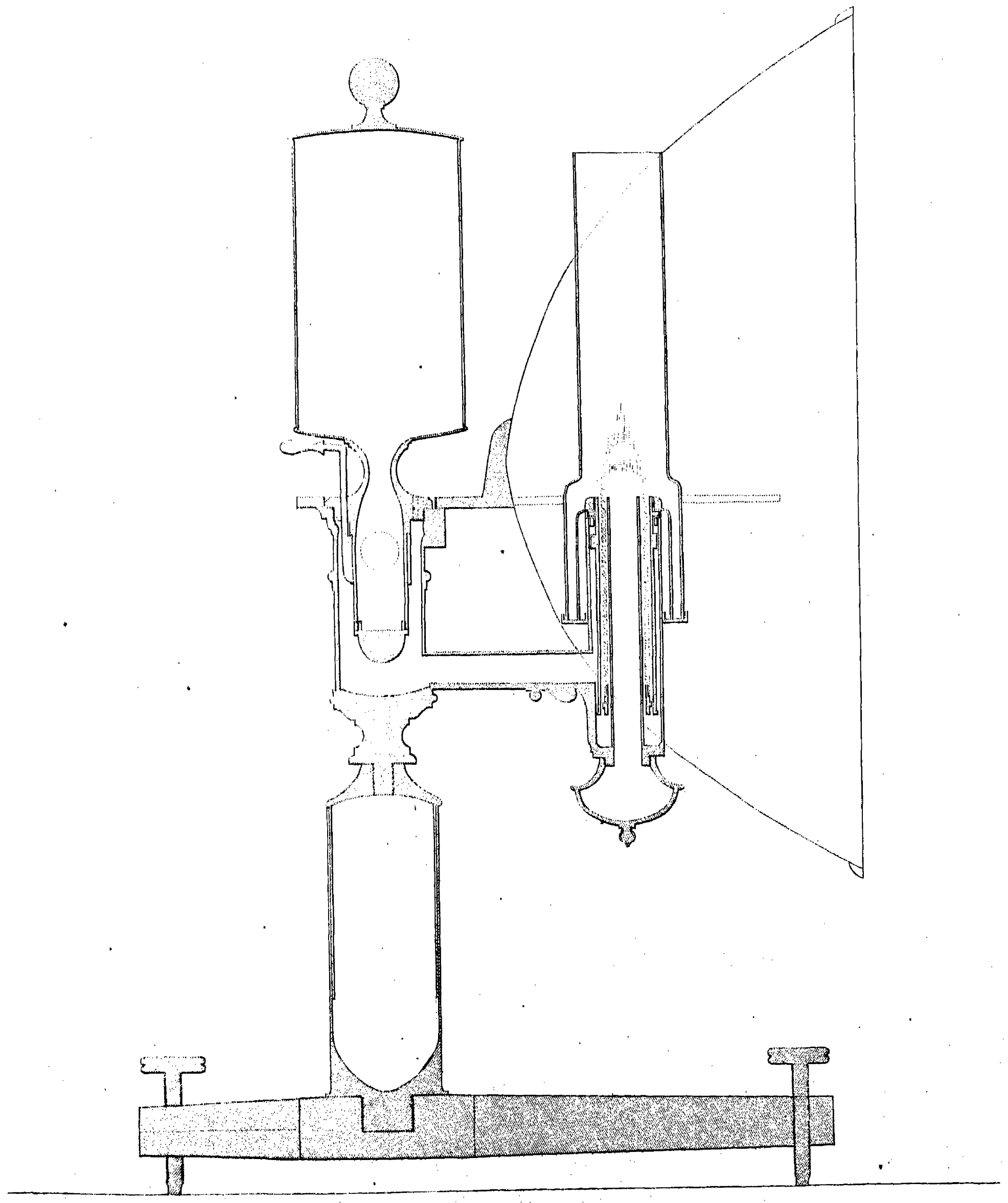


Drawings Illustrative of the Referring Sight Vane.

Drawn in the Field Office of the Surveyor General of India at Hattipaon.

Engraved by S. Stocking.

SECTION OF THE REVERBERATORY LAMP, CONSTRUCTED BY MESSRS. TROUGHTON AND SIMMS, BY ORDER OF THE H.E.I.COMPANY FOR THE GREAT TRIGONOMETRICAL SURVEY OF INDIA.

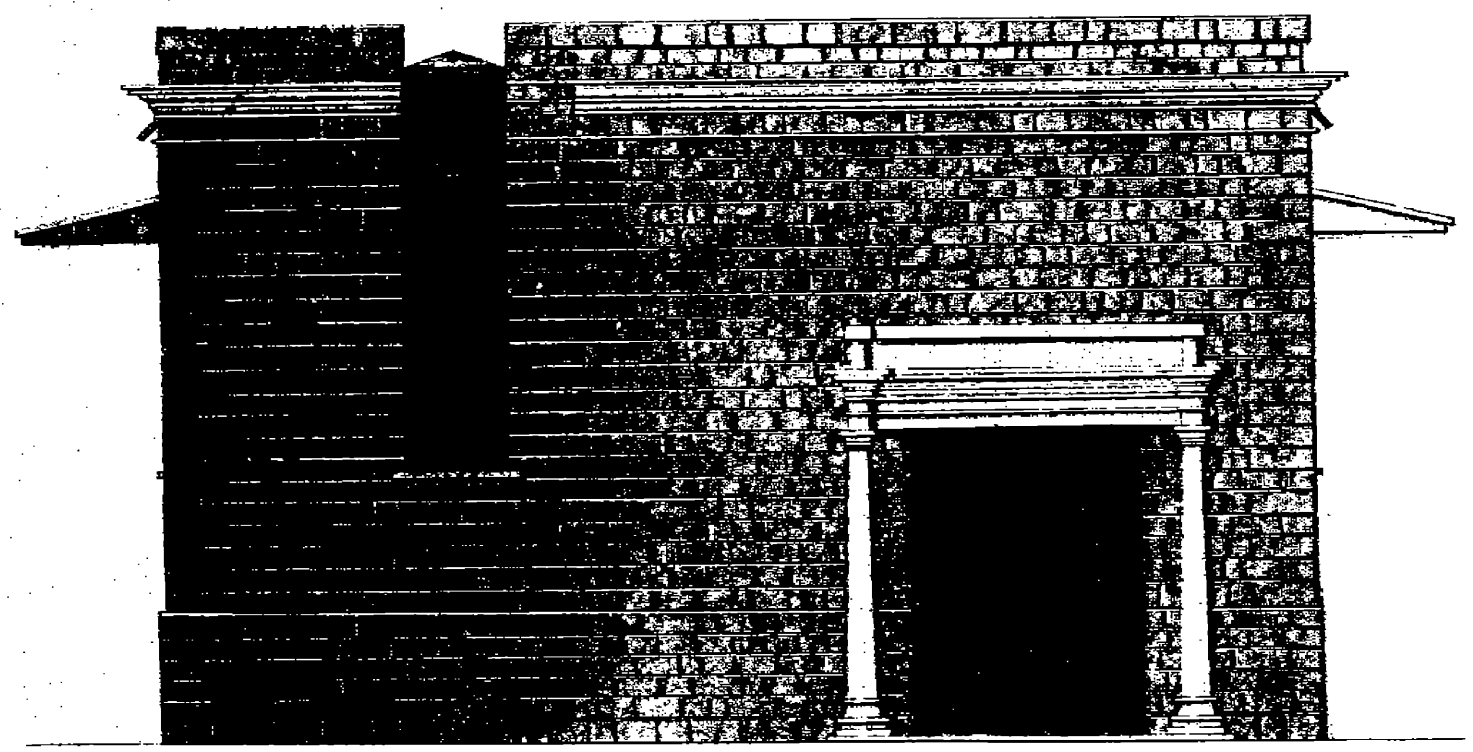


Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

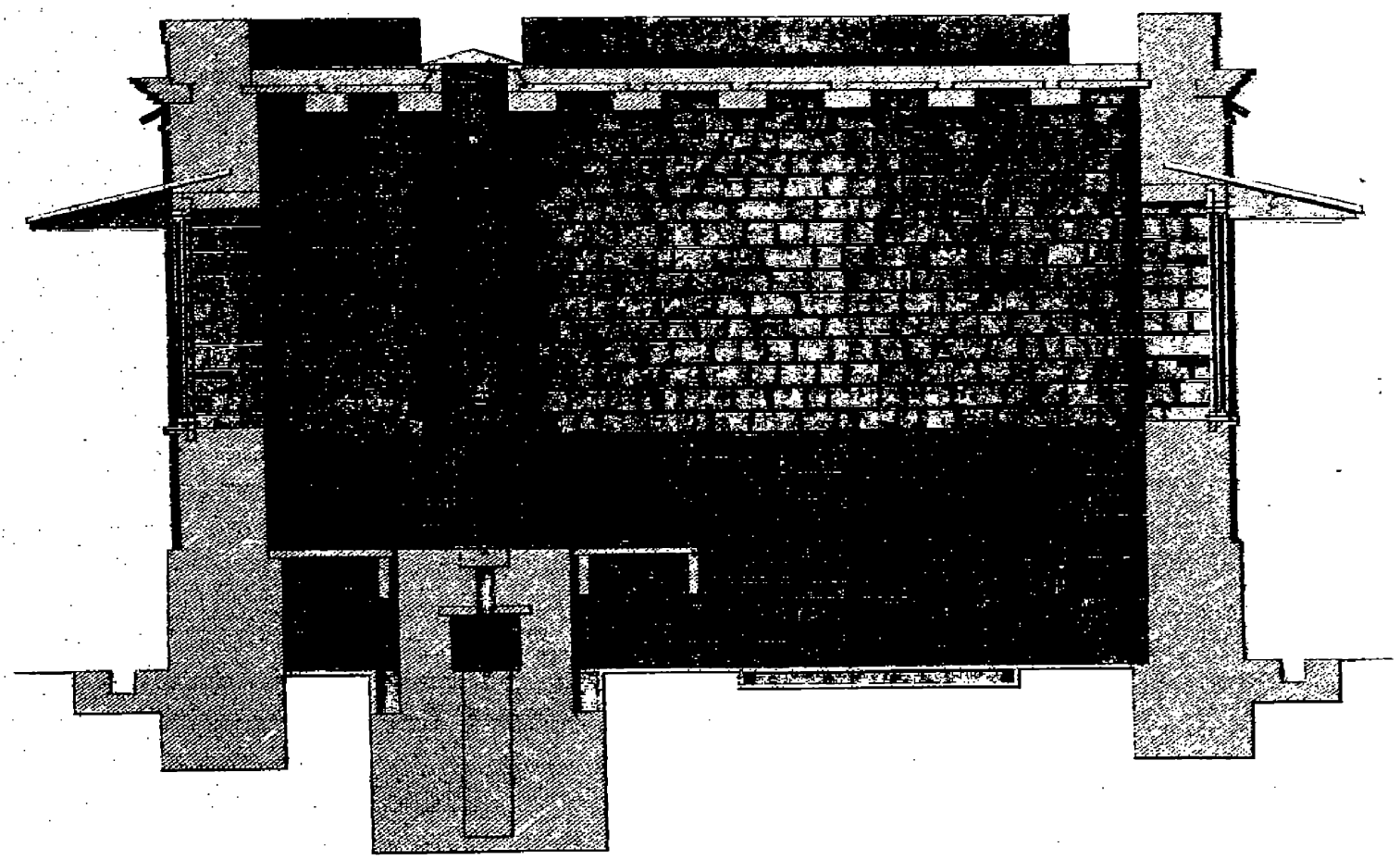
Engraved by C. Stocklyn.

DRAWINGS ILLUSTRATIVE OF THE OBSERVATORY, CONSTRUCTED AT THE G.T.S. STATION AT KALIANPUR.

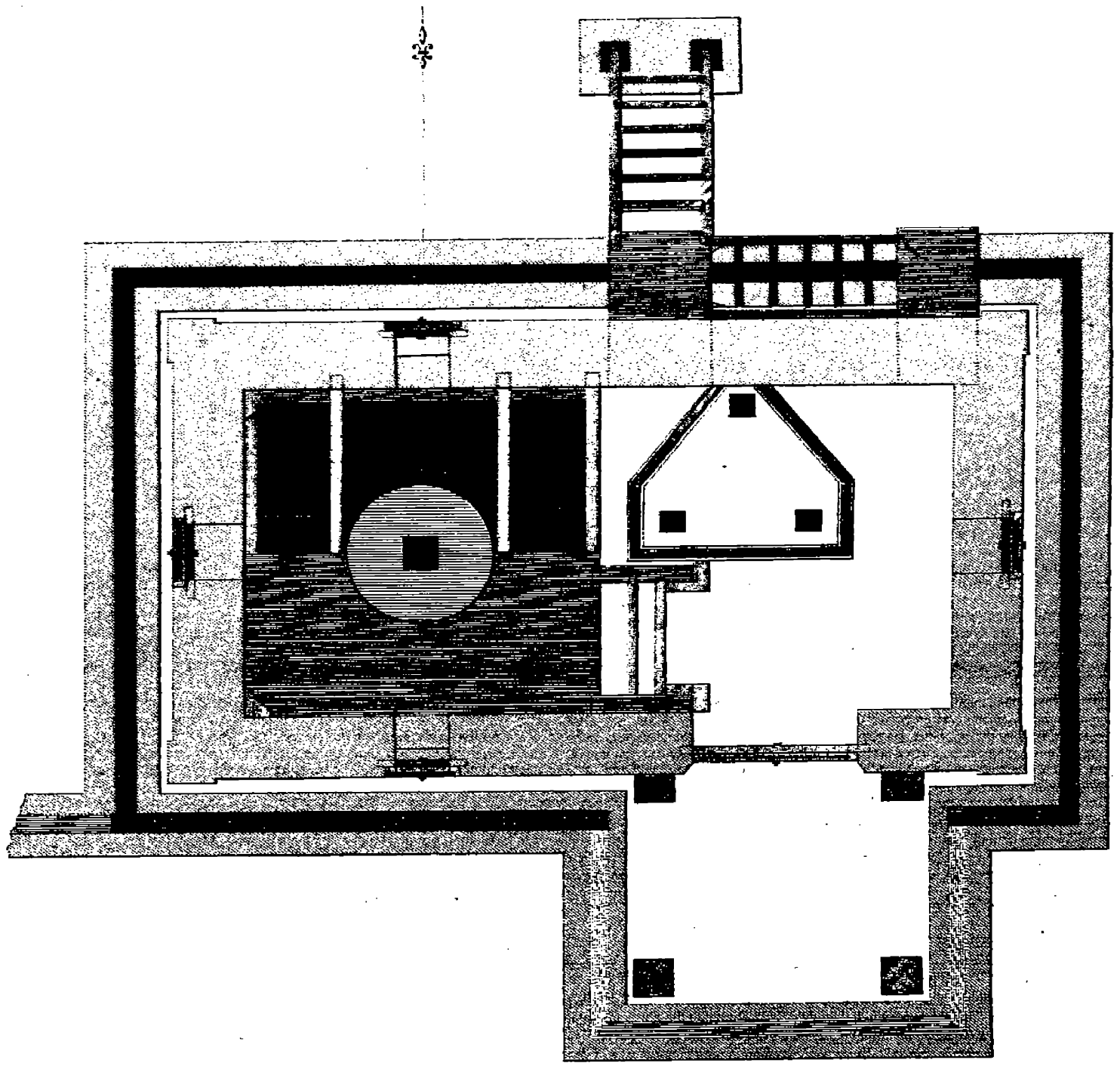
ELEVATION SOUTH VIEW.



SECTION THROUGH THE STATION PILLAR IN THE PLANE OF THE PRIME VERTICAL.



GROUND PLAN.



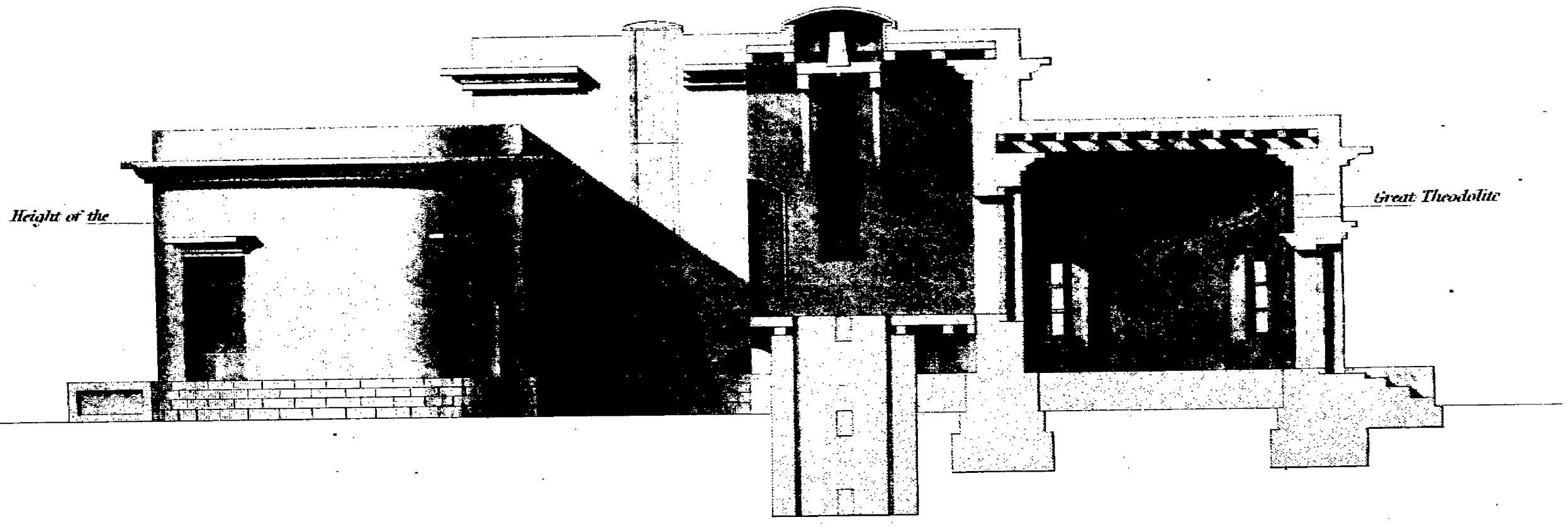
0 3 6 9 12 15 18

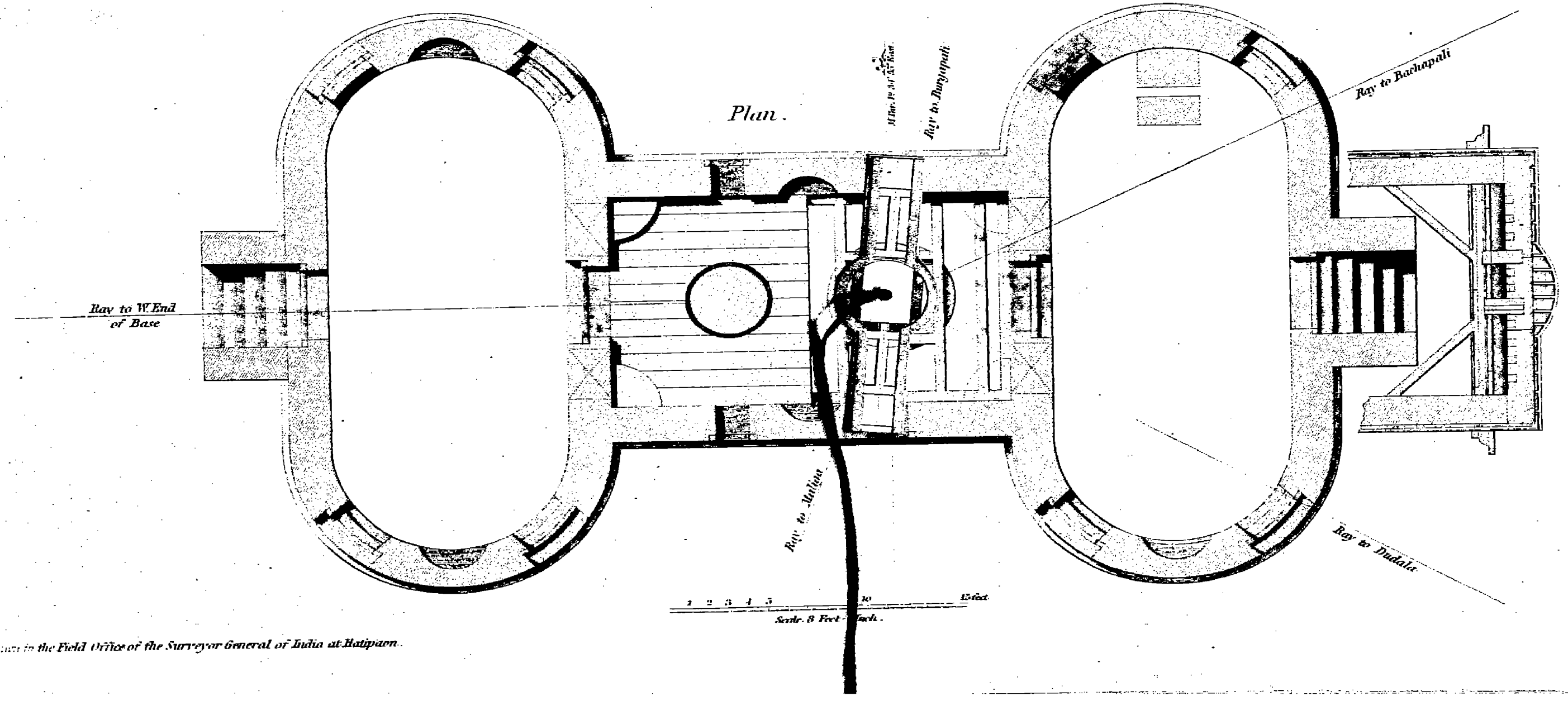
Scale of 6 feet to an Inch.

Drawn in the Field Office of the Surveyor General of India at Hatipaon.

Engraved by S. Stuckley.

DRAWINGS ILLUSTRATIVE OF THE OBSERVATORY AT DAMARGIDA CONSTRUCTED BY CAPT A.S.WAUGH ASTRONOMICAL ASSISTANT TO THE SURVEYOR GENERAL OF INDIA IN THE YEAR 1838.9.

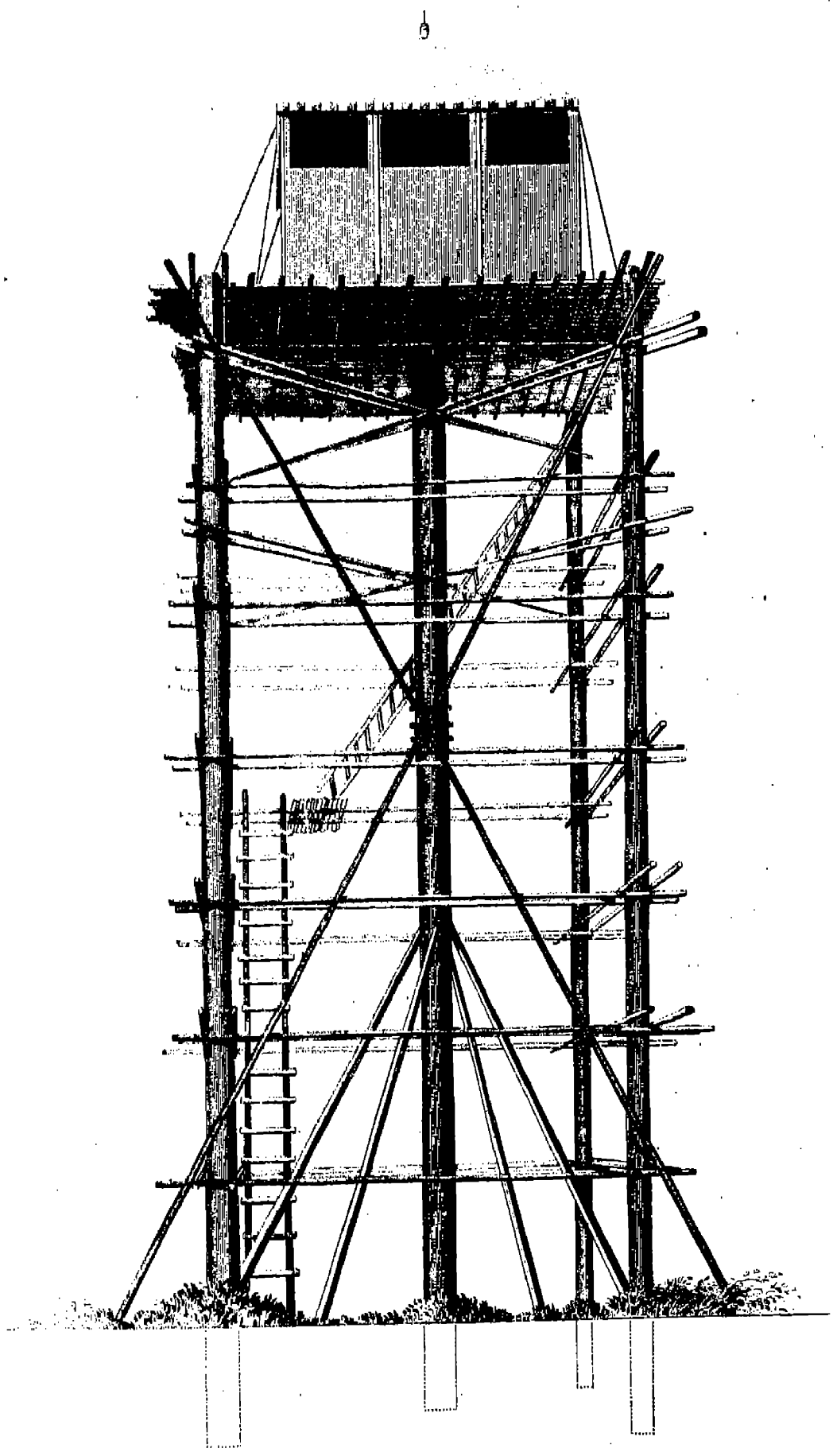




Drawn in the Field Office of the Surveyor General of India at Hatipaon.

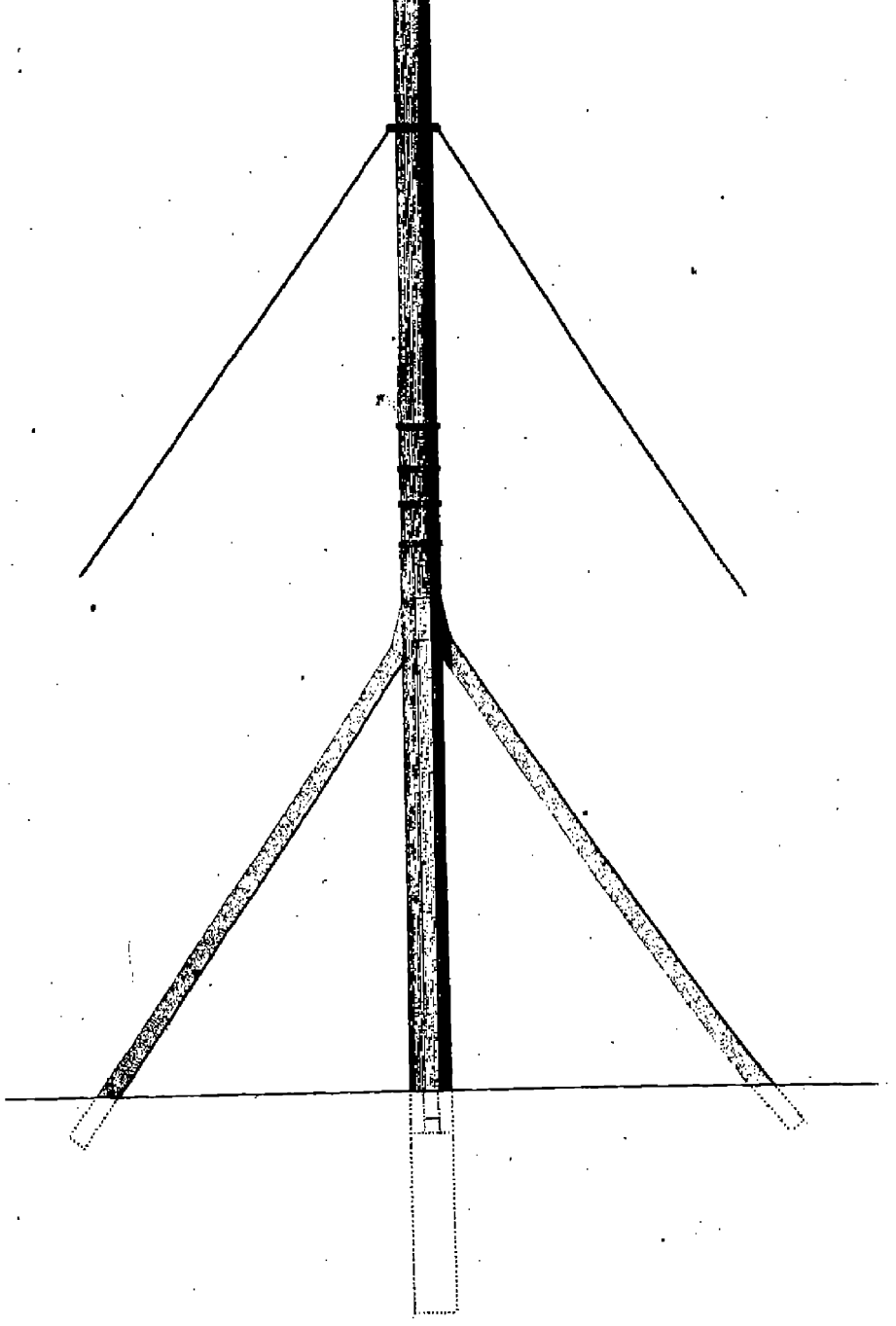
Engraved by S. Stockley.

PERSPECTIVE DRAWING OF THE SCAFFOLDING USED IN THE APPROXIMATE OPERATIONS OF THE GREAT ARC SERIES IN 1833-4.



Perspective Drawing

DRAWING ILLUSTRATIVE OF THE MAST.



0 5 10 15 20 Feet

Scale to Mast

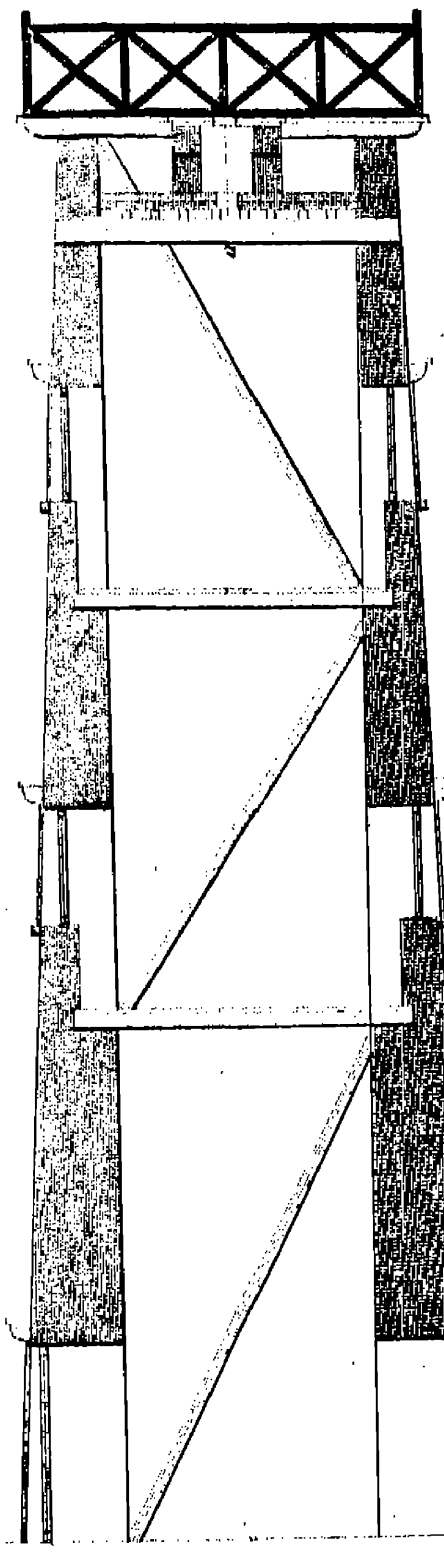
Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Engraved by S. Stockley.

ELEVATION SECTIONS & PLANS ILLUSTRATIVE OF THE TOWERS IN THE DOAB.

Fig. 2

Transverse Section.



Plan of Platform

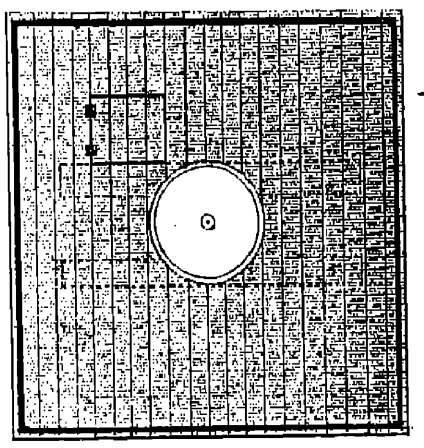


Fig. 7

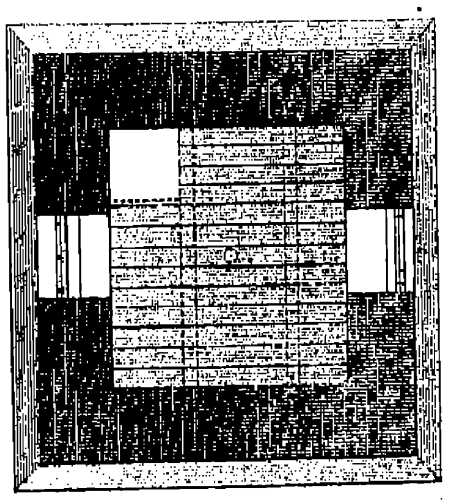


Fig. 6

Plan of 1st. Story

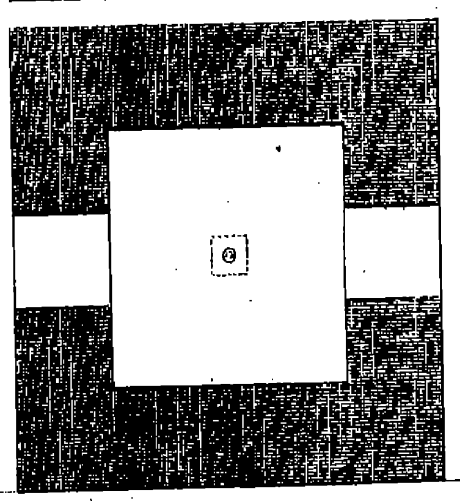
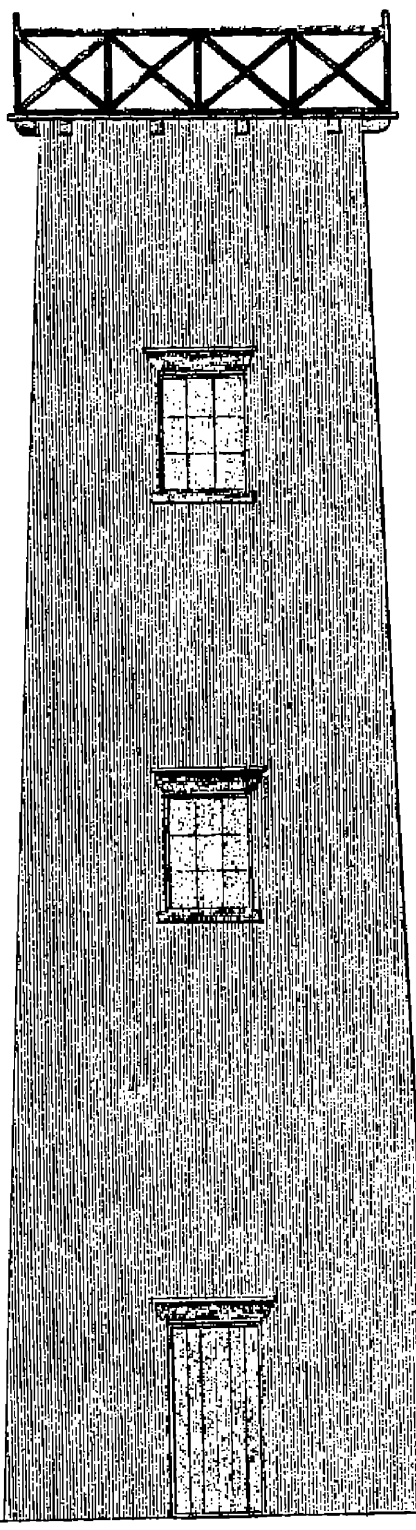


Fig. 5

Ground Plan

Fig. 1

Elevation



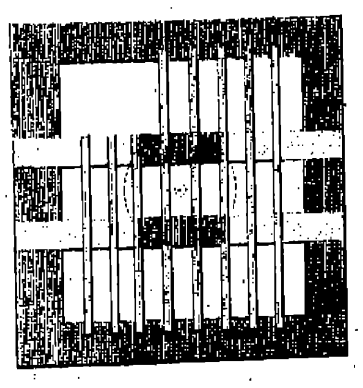


Fig. 3

Plan of platform shewing joists

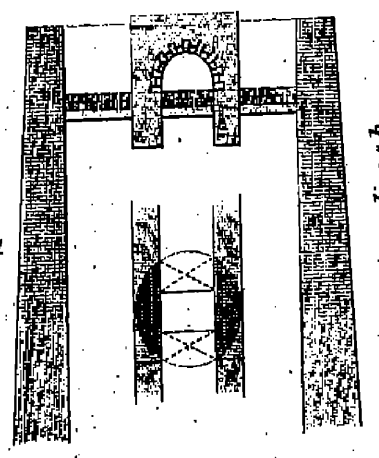


Fig. 4

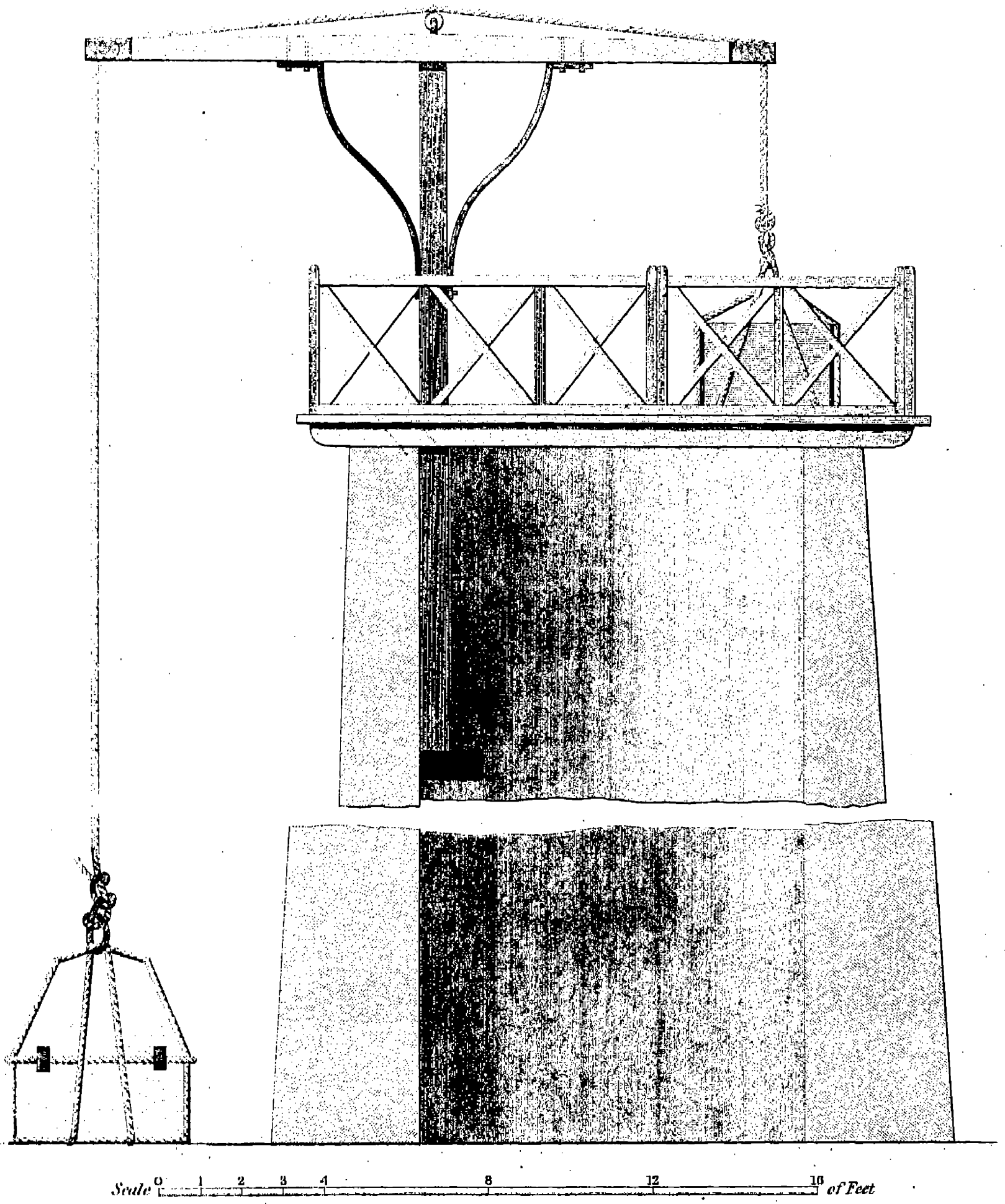
Section on line a.b.

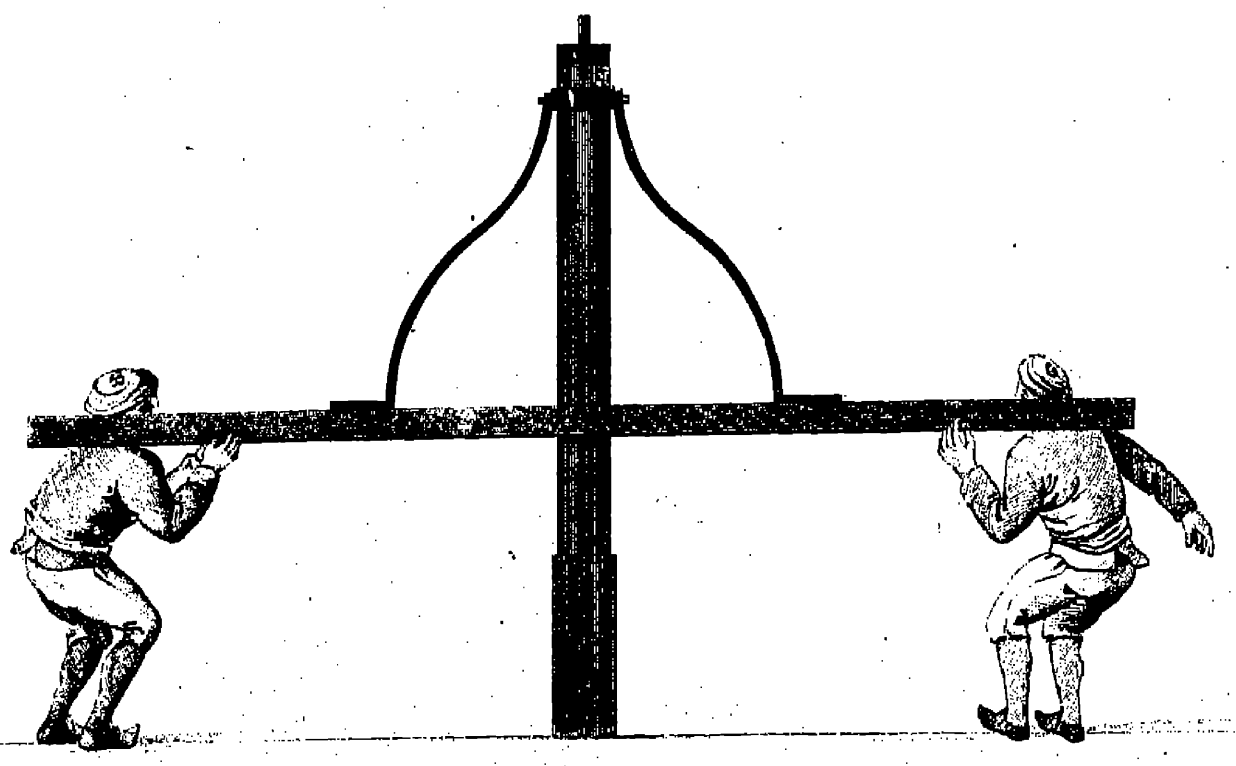
10 5 0 10 30 30 Feet

Drawn in the Field Office of the Surveyor General of India, at Hatipaun.

Engraved by S. Stockley.

DRAWINGS DESCRIPTIVE OF THE CRANE CONSTRUCTED FOR RAISING THE GREAT THEODOLITE TO THE TOPS OF THE STATION TOWERS OF THE GREAT TRIGONOMETRICAL SURVEY OF INDIA.





Method of mounting & adjusting the Crane.

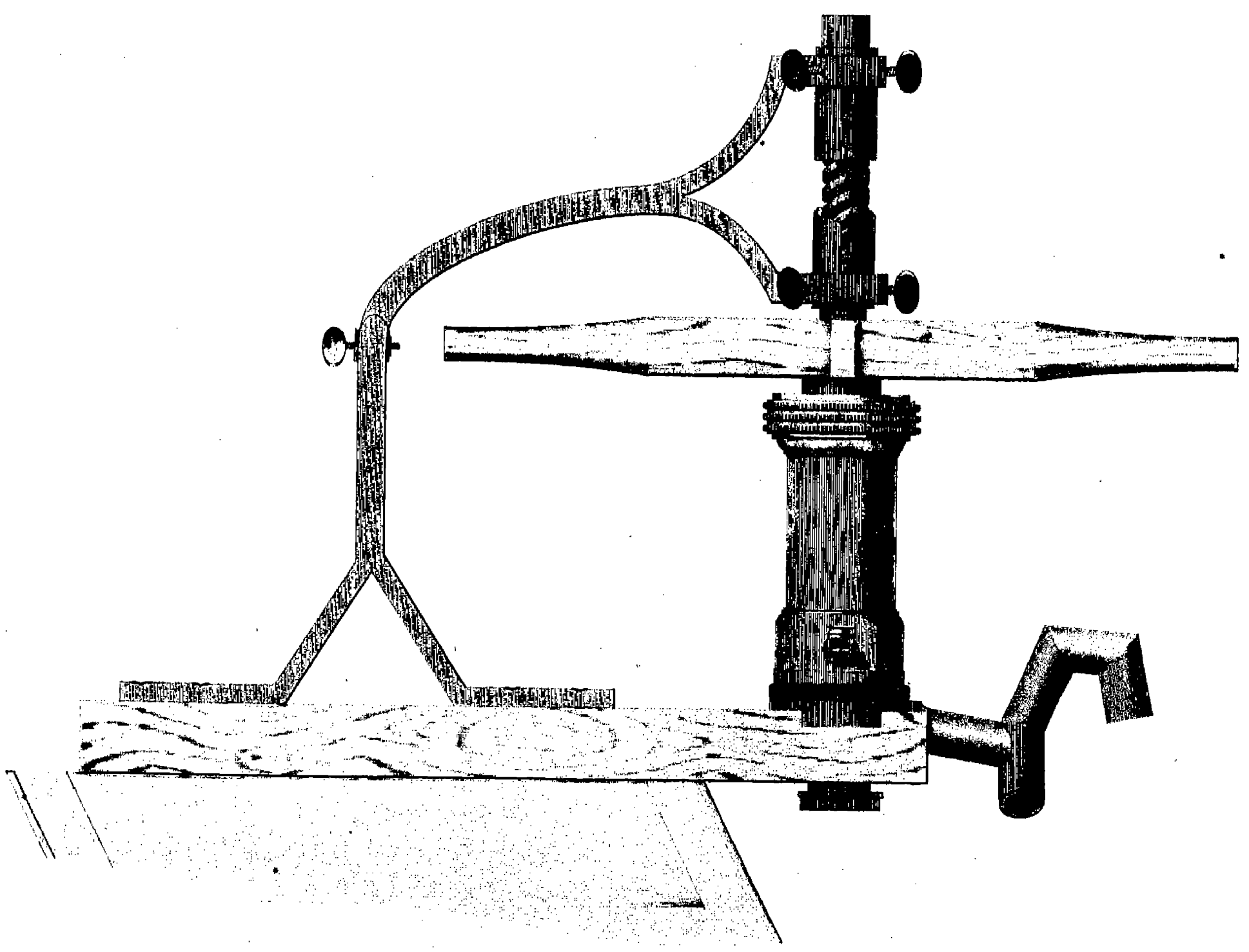
Drawn in the Field Office of the Surveyor General of India at Hutipaon.

Engraved S. Stockley.

DRAWING ILLUSTRATIVE OF A BAROMETER PUMP DESIGNED TO FILL BAROMETER TUBES IN VACUO.

Side Elevation.

Quarter Size.



Drawn in the Field Office of the Surveyor General of India at Hatipaon.

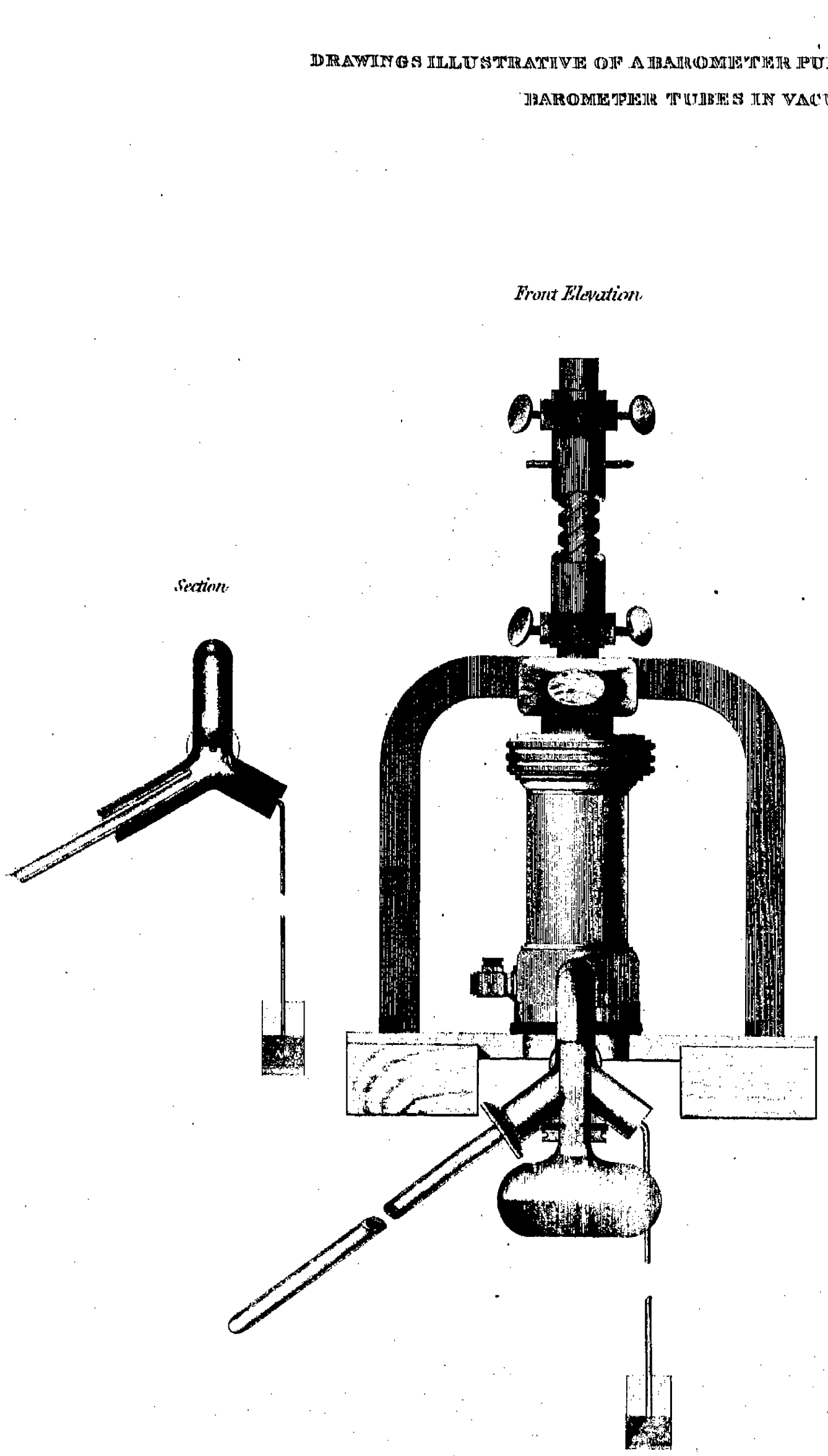
Engraved by S. Stoddy.

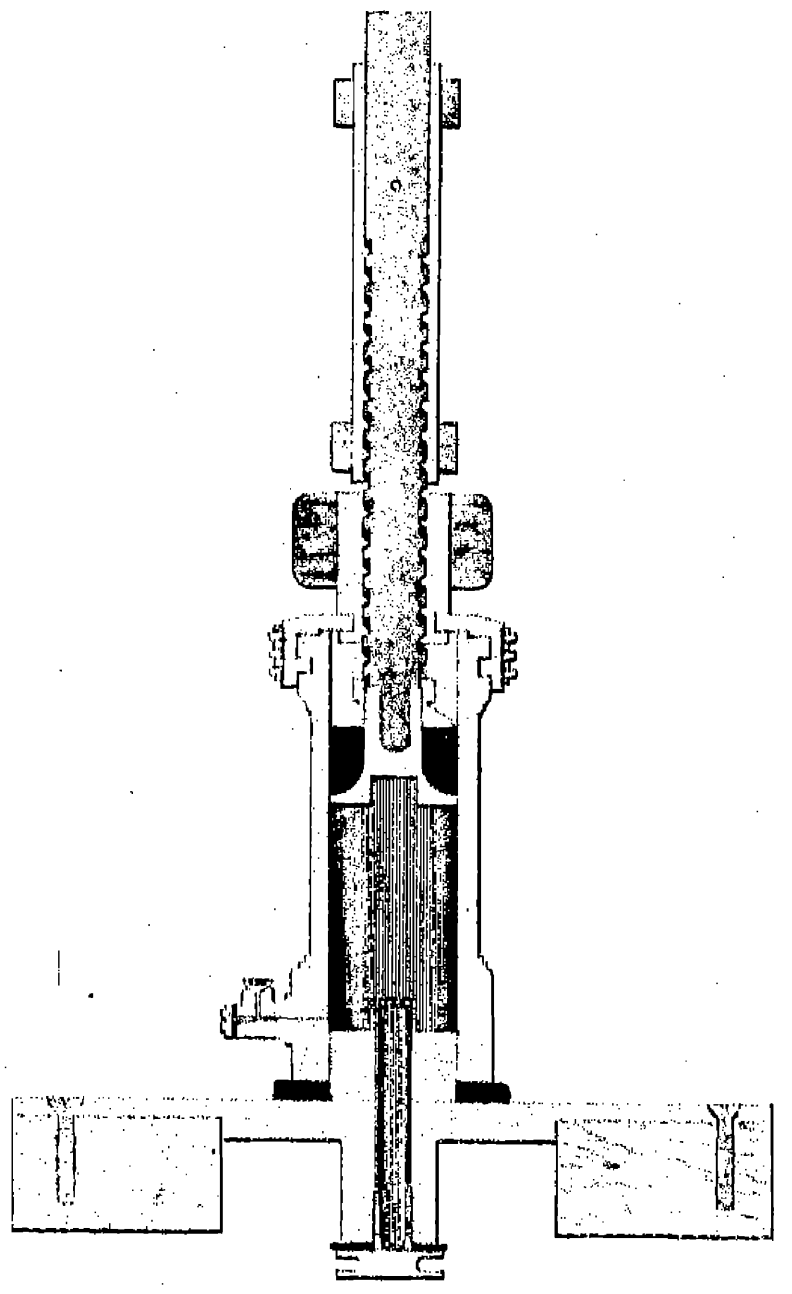
DRAWINGS ILLUSTRATIVE OF A BAROMETER PUMP DESIGNED TO FILL BAROMETER TUBES IN VACUO.

Front Elevation.

Section

Section





Quarter Natural Size.

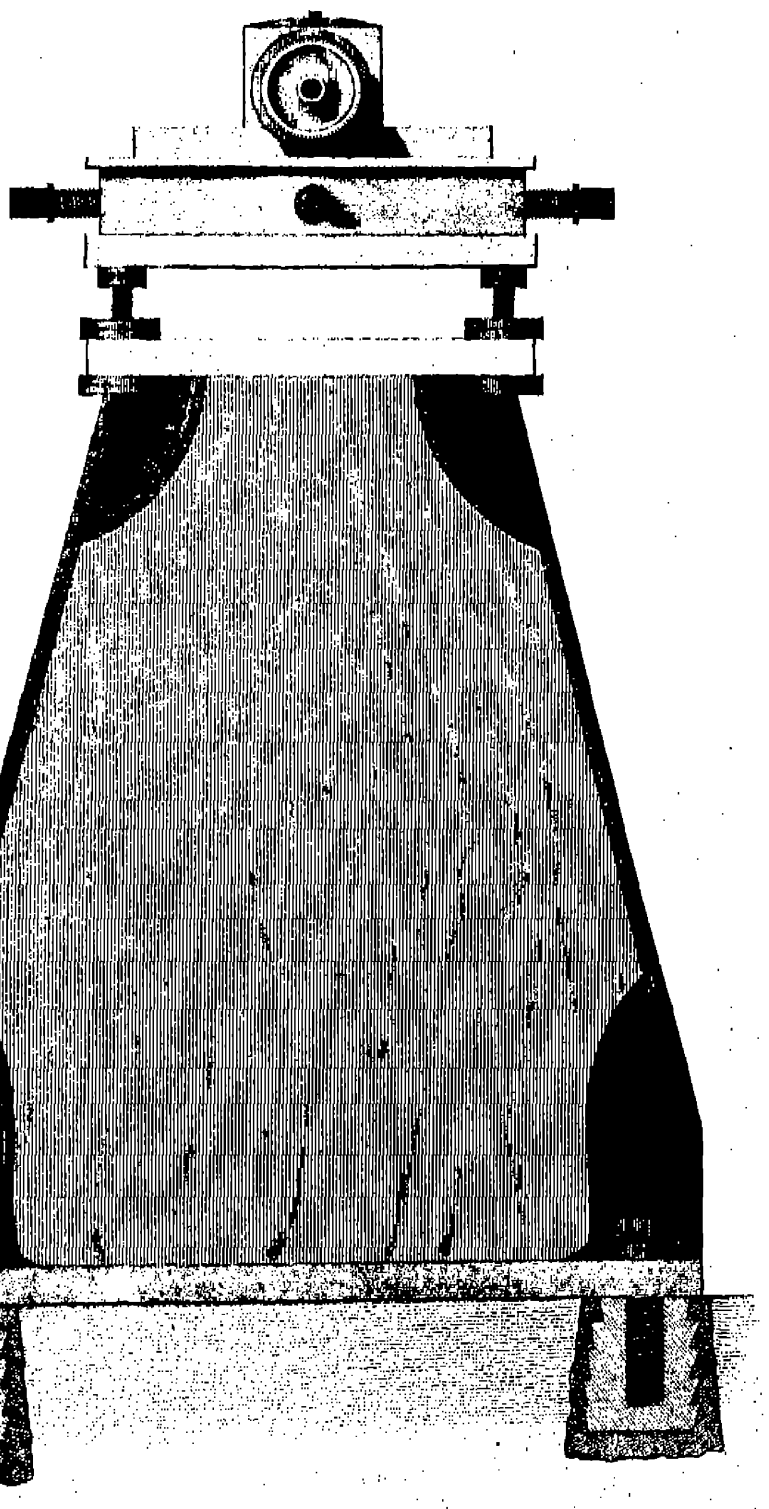
Drawn in the Field Office of the Surveyor General of India, at Hutipaon.

Engraved by S. Stocklin.

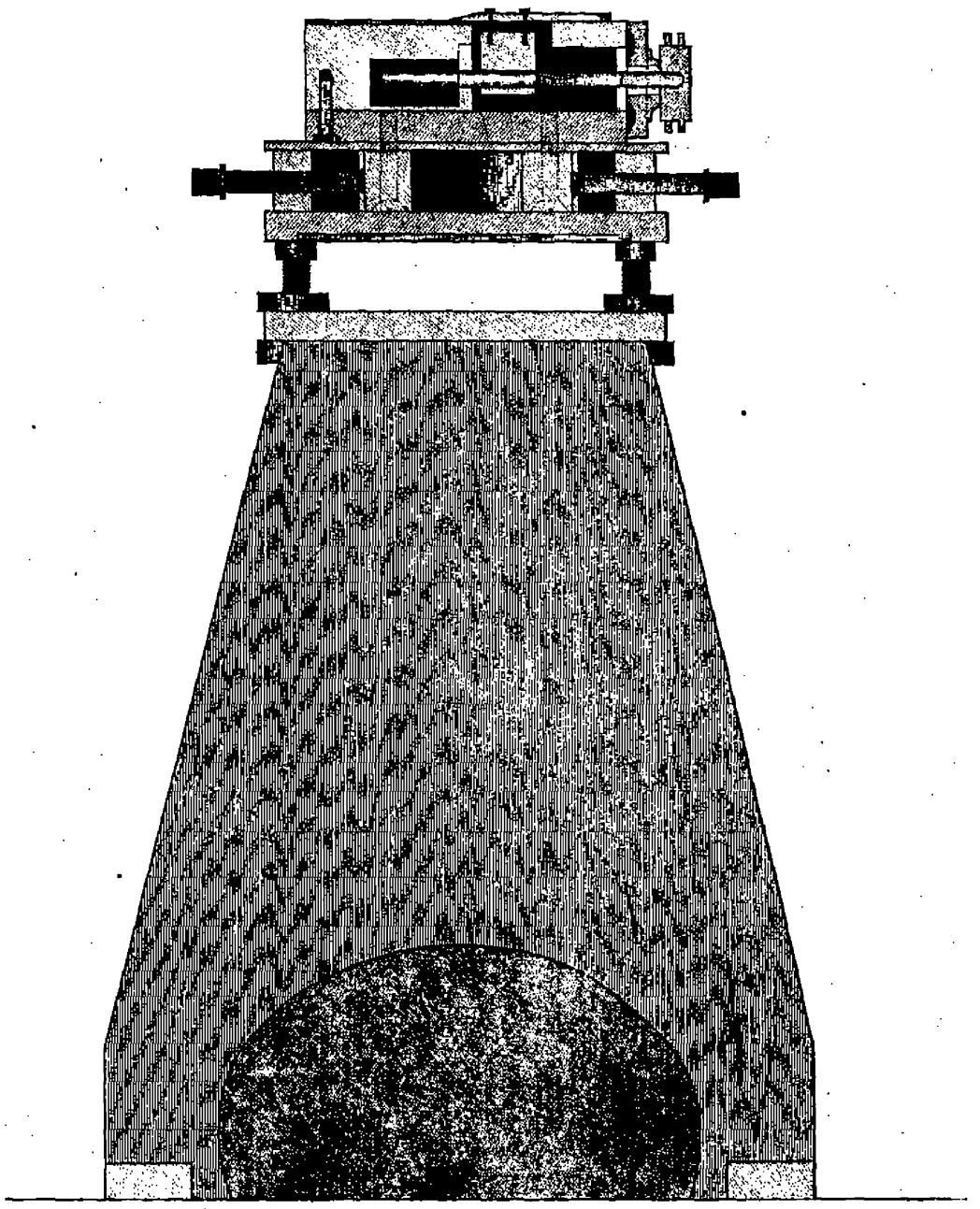
Plan, Elevation & Section of the Pyramidal Micrometer, used at the end of the Chain.

Half Natural Size.

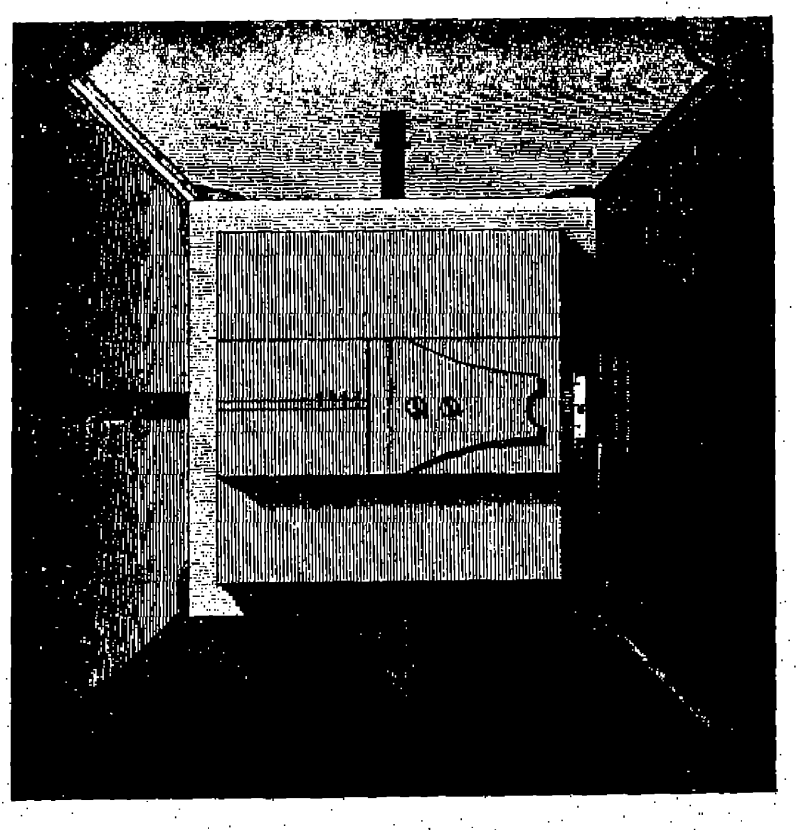
Elevation



Section



Plan



Drawn in the Field Office of the Surveyor General of India, at Hatipaon.

Engraved by S. Stockley.